

**REDUCING THE FOOD STEALING AND PICA OF A YOUNG ADULT
WITH MULTIPLE DISABILITIES IN RESPITE CARE**

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Corrina Joanne van Eyk

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TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS.....	1
ABSTRACT.....	2
CHAPTER ONE INTRODUCTION.....	3
Description and Definition of Multiple Disabilities.....	3
Transition to Adulthood.....	4
Description and Definition of Problem Behaviour.....	6
Prevalence of Problem Behaviour in Young Adults with Multiple Disabilities.....	6
Factors that Maintain Problem Behaviour.....	7
Impact on the Individual and their Family.....	9
Description and Definition of Respite Care.....	15
Impact of Respite Care on Family Environment.....	16
Māori Perspective of Disability and Intellectual Disability.....	18
CHAPTER TWO LITERATURE REVIEW.....	21
Common Approaches to Behaviour Problems.....	21
Understanding Problem Behaviour.....	24
- Functional Analysis.....	24
- Functional Assessment.....	26

Changing Problem Behaviour.....	27
- Teaching Replacement Behaviour.....	27
- Functional Communication Training.....	28
- Augmentative and Alternative Communication.....	28
Meta-Analyses and Systematic Reviews.....	29
Recent Studies of Interventions for Problem Behaviour.....	33
- Interventions with Functional Analysis or Assessment.....	33
- Interventions in Respite-Type Settings.....	35
Summary and Limitations.....	50
Research Question	58
CHAPTER THREE METHOD.....	87
Ethical Approval.....	87
Participants and Setting.....	88
Procedures and Measures.....	90
Baseline Functional Assessment.....	90
Formulation Phase.....	93
Intervention Phase.....	97
Follow-Up Phase.....	97
Social Validity.....	98

CHAPTER FOUR IMPLEMENTATION AND RESULTS.....	99
Findings from the Functional Assessment and Observations.....	101
- Nominated Problem Behaviour One: Food Stealing.....	107
- Nominated Problem Behaviour Two: Pica.....	108
- Formulation of Hypotheses.....	110
Reviewing the Literature.....	112
- Food Stealing.....	112
- Pica.....	121
Identifying Interventions for Helena.....	129
- Food Stealing.....	129
- Pica.....	130
Results of the Positive Behaviour Plans.....	136
Social Validity.....	140
CHAPTER FIVE DISCUSSION.....	142
Summary of Findings and Comparison to the Literature.....	142
Limitations of the Study.....	151
Implications for Future Research.....	152
Conclusion.....	155
REFERENCES.....	157

APPENDICES.....	170
Appendix A. University Ethics Committee Approval.....	170
Appendix B. Agency Information Sheet.....	172
Appendix C. Agency Consent Form.....	180
Appendix D. Parent and Young Adult Information Sheet.....	181
Appendix E. Parent and Young Adult Assent Form for Functional Assessment.....	187
Appendix F. Respite Staff Information Sheet.....	189
Appendix G. Respite Staff Consent Form for Functional Assessment.....	194
Appendix H. Positive Behaviour Plan One for Food Stealing.....	196
Appendix I. Positive Behaviour Plan Two for Food Stealing.....	202
Appendix J. Positive Behaviour Plan One for Pica.....	207
Appendix K. Positive Behaviour Plan Two for Pica.....	211
Appendix L. Parent and Young Adult Assent Form for Interventions.....	214
Appendix M. Respite Staff Consent Form for Interventions.....	216
Appendix N. Staff Recording Sheet for Food Stealing and Pica.....	218
Appendix O. Debriefing Sheet.....	220

LIST OF TABLES.....

Table 1.	Quality of effect sizes.....	51
Table 2.	Summary of published interventions for the reduction of problem behaviours in 54 individuals with multiple disabilities from single-subject designs	61
Table 3.	Summary of the outcomes and Percent Non-overlap Data Analysis effect of single-subject interventions on the reduction of problem behaviour in 54 individuals with multiple disabilities.....	79
Table 4.	Typical weekend respite care schedule.....	89
Table 5.	Average total time in respite care activities.....	90
Table 6.	Observations of food stealing over two days at the respite centre during the functional assessment.....	107
Table 7.	Observations of pica over two days at the respite centre during the functional assessment.....	109
Table 8.	Formulation of hypotheses for pica as a respondent class behaviour.....	110
Table 9.	Formulation of hypotheses for pica as an operant class behaviour.....	112
Table 10.	Abbreviated Acceptability Rating Profile (AARP) scores.....	141

LIST OF FIGURES.....

Figure 1.	Caregiver and young adult interactions and reactions.....	13
Figure 2.	ABC observation form.....	92
Figure 3.	Social stories of functional communication training for food stealing.....	133
Figure 4.	Social stories of interventions for pica.....	134
Figure 5.	Functional communication training for food stealing and antecedent manipulation for pica.....	137
Figure 6.	Teaching functional communication training.....	138

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REDUCING THE FOOD STEALING AND PICA OF A YOUNG ADULT WITH MULTIPLE DISABILITIES IN RESPITE CARE

ABSTRACT

Problem behaviours occur in approximately 10 to 15% of individuals with intellectual disabilities and these behaviours most often include aggression and self-injury. Families who support young adults with multiple disabilities and problem behaviour at home often experience costs to their psychological, physical, financial and emotional wellbeing. Respite care evolved to allow families short breaks from care giving and to support families in looking after their family members at home. Furthermore, problem behaviour severely limits opportunities for individuals with multiple disabilities to interact adaptively with their environments and develop positive behaviour skills that increase the possibility of living independently in their adult years.

The present study aimed first to demonstrate the utility of functional analysis of problem behaviour in respite care, and then, to reduce food stealing and pica exhibited by a young adult with multiple disabilities attending a respite care centre. Following a functional analysis that indicated food stealing and pica had the probable function of hunger reduction, two positive behaviour support plans were developed. These interventions, conducted at the respite centre three days a week by centre staff, involved strategies to teach the participant to sign “eat” in New Zealand Sign Language (NZSL) to gain access to food and increase accessibility of food in the environment to reduce pica. The results showed that introducing the NZSL sign reduced food stealing to near zero within three weeks and pica was eliminated following the combined approach of functional communication training and antecedent manipulation. Use of the communicative sign was maintained at follow-up and food stealing remained at near zero, while pica remained at zero one-month following the intervention.

CHAPTER ONE

INTRODUCTION

Multiple Disabilities

Disability is a broad term covering impairment, participation restriction and activity limitation. Impairment is a problem with physical function or structure; participation restriction occurs when an individual has difficulty engaging in everyday life situations; and activity limitation is the difficulty an individual experiences when they perform an action or task (WHO, 2013). “Individuals with multiple disabilities exhibit two or more disabilities...” (Sacks, Barret, & Orlansky, 1997, p. 179). Disabilities may be psychiatric, physical, neurological, sensory or intellectual (Harries, Guscia, Nettelbeck, & Kirby, 2009) and individuals may have more than one disability. For this study, multiple disabilities are classed as intellectual disabilities with additional neurological, physical, sensory, communicative, or developmental disabilities, e.g., a person who has both an intellectual disability and autism would be classified as having multiple disabilities.

The prevalence of intellectual disability is estimated to be between 1 % and 3 % worldwide (Maulik, Mascarenhas, Mathers, Dua & Saxena, 2011) and as a result of early intervention and improved medical care, the survival rates of people born with intellectual disabilities are increasing (Capales & Sweeney, 2010). The percentage of mild, moderate, severe and profound disabilities affects respectively 85 %, 10%, 4%, and 2% of the whole population with intellectual disabilities (Maulik et al., 2011). Individuals with more severe levels of intellectual impairment tend to have higher rates of co-morbidity with other disabilities (Harries et al., 2009). In particular, the co-morbidity of intellectual disabilities and other disabilities is as follows: psychiatric (31%), sensory (29%), and physical disabilities

(25%) (Harries et al., 2009). In New Zealand there were 33,700 adults and 16,900 children living with intellectual disabilities in the year 2006 (Statistics New Zealand, 2007).

Transition to Adulthood

Individuals with multiple disabilities are commonly dependent to some degree on their caregivers for meeting their basic need for care and this dependency does not diminish over time. Having multiple disabilities may mean that the individual requires a higher level of support to learn to do tasks for themselves and as a result may have more difficulty in being able to carry out the task themselves, which may reduce the persons' independence. This means that parents need to dedicate more time to reinforce and repeat tasks if they want to teach their child skills for independence. However, parents may fail to promote their son/daughters' independence because of time constraints or lack of belief their son/daughter can actually complete the task (Harr, Dunn, & Price, 2011). In addition, parents have stated that the time spent teaching their son/daughter with disabilities to be independent in daily care tasks can take longer and is more exhausting than just assisting with daily caring themselves (Power, 2008). Parents are aware of their own mortality and the importance of teaching their son/daughter independence and the ability to provide basic care themselves. This is because the ability of parents to continue assisting with personal caring may decline as parents become older and are less physically able themselves (Power, 2008). However, because the demands of care giving generally fall to one care giver (Capales & Sweeney, 2010), the stress of care giving means that parents may find it easier to continue assisting their family member with their daily tasks, rather than teaching them the skills to be independent (Power, 2008). Some of the problems adults with multiple disabilities have with basic care include toileting, personal hygiene, and feeding (Matson et al., 2009). Adaptive skills are more limited for people with multiple disabilities than for people with a single disability. For example, the mean scores for adaptive living skills for individuals with autism

and intellectual disability were significantly below that of individuals with a sole diagnosis of intellectual disability (Matson, Dempsey & Fodstad, 2009). Skills such as toileting are generally mastered by age four years for typically developing children. However, for individuals with multiple disabilities, problems with toileting often continue into adulthood (Matson, Horovitz & Sipes, 2011). Lack of such adaptive skills can reduce the possibility that the person with disabilities will be able to live independently and look after themselves for significant periods of their lives.

Lacking the skills to look after your own basic needs independently is also associated with difficulties socialising. In regards to looking after personal needs, for instance, a study of 153 adults with multiple disabilities, found that over 50% had toileting accidents either during the day, the night, or both. Not only does this greatly affect the possibility of living independently in their own home (Matson, Horovitz, & Sipes, 2011), it may also lead to difficulties with socialisation with peers complaining or teasing about the smell of the individual following such accidents leading to difficulty making friends and maintaining friendships (Belva, Matson, Barker, Shoemaker, & Mahan, 2011). Individuals with multiple disabilities generally have fewer social skills than individuals with a single disability (Smith & Matson, 2010) and it is common for adults with multiple disabilities to experience social isolation as a consequence of having poor social skills (Smith & Matson, 2010). Socially adaptive skills include the use of verbal and non-verbal abilities to communicate with others. For example, in a study comparing social skill levels in individuals with multiple disabilities and individuals with a single disability (Matson, Hattier, & Turygin, 2012, p. 510), individuals with multiple disabilities more often reported to '*prefer to be alone*' and '*isolate self*'. Being more dependent on others for meeting basic needs may reduce a person's social skills and poor social skills may lead to a preference of being alone. As a result of being

socially isolated, the individual has fewer opportunities to learn socially adaptive skills and this creates a cycle of social isolation leading to poor social skills and vice versa.

Problem Behaviour

Problem behaviour is behaviour that “has the potential to harm the individual or others; interferes with the individual’s potential to learn or work or interact adaptively with the environment; and/or is socially odd or bizarre that inhibits normalization within the community” (Smith & Matson, 2010, p. 1063). The most common forms of problem behaviour evidenced by people with disabilities include: aggression (i.e., attacking others); self-harm; destruction of property; or other behaviour (i.e., screaming, pica, non-compliance, and inappropriate social or sexual conduct) (Holden & Gitleson, 2006). People with multiple disabilities more commonly present with aggressive behaviour and self-injurious behaviour than any other type of problem behaviour (Smith & Matson, 2010). Aggressive behaviours include being verbally abusive (i.e., swearing, yelling, threatening others), physically abusive (i.e., hitting, scratching, biting others), or physical aggression against objects or property (i.e., slamming doors, breaking windows) (Hellings, Nickel, Weckbaugh, McCarter, Mosier, & Schroeder, 2005). Self-injurious behaviours may include the individual biting themselves, hitting themselves, or banging any part of their body (Smith & Matson, 2010).

Of adults with intellectual disabilities, 10-15% show at least one form of problem behaviour (Emerson, Kiernan, Alborz, Reeves, Mason, Swarbrick, Mason & Hatton, 2001) and without treatment problem behaviour is likely to persist over a persons’ lifetime (Matson & Rivet, 2008). The likelihood that a person will manifest problem behaviour is increased when the person has additional disabilities. The prevalence of people with multiple disabilities living in residential facilities with problem behaviour is approximately 50% to 60% (Smith & Matson, 2010).

Factors that Maintain Problem Behaviour

Self-injurious behaviour and aggression can be particularly harmful to both the individual and/or other people so it is important to look at the factors that maintain this behaviour as a way to better understand what is needed to change the behaviour. The most common factors that contribute to an individual maintaining problem behaviour has included their social reinforcement, escape from an undesirable task or, environment, being left alone, obtaining something tangible, experiencing physical discomfort (Matson & Boisjoli, 2007) or automatic reinforcement (i.e., reinforcement that is not provoked by the deliberate action of another person) (Beavers, Iwata & Lerman, 2013). In addition, another factor that may contribute to the maintenance of problem behaviour has included parent's viewing their child's disability as the cause for their problem behaviour (Woolfson, Taylor & Mooney, 2011). The number of factors that maintain problem behaviour increase and become more complex over a person's life course. This is because people learn that they may need to adapt their behaviour in order to gain reinforcement across contexts or with different people. Methods for identifying these factors are called 'functional analysis', in that they are concerned to identify the function of the behaviour rather than properties such as its topography or rate (Hanley, Iwata & McCord, 2003).

Young adults with multiple disabilities may engage in aggressive or self-injurious behaviours because those behaviours receive reinforcement. The function of the different behaviours may be the same, though the events that reinforce such behaviour may vary. This is because young adults have learned that different behaviours may be required to gain the same reinforcement when they are in different contexts or interacting with different people. For example, Matson and Boisjoli (2007) found that the most common function for aggressive behaviour was escape (i.e., 44%) and the most common function for self-injurious behaviour was to be alone (i.e., 41%), however, 37% of aggressive behaviour and 55% of

self-injurious behaviour had more than one function. The most common multiple functions for aggressive behaviour were used as a means to escape a situation or task, to gain something tangible, and to seek attention, whereas the functions of self-injurious behaviour were more commonly used to gain attention, to escape an undesirable situation, and for non-social reasons (e.g., being left alone). It is important to recognise that problem behaviour may be maintained by more than one function. This is important in the treatment phase because treatment of problem behaviour is unlikely to be successful in the long-term if the maintaining variables of problem behaviour have not been targeted. Therefore it is important that all maintaining factors, if applicable, be identified via functional analysis and included in the treatment plan.

Parental views about disability can influence the maintenance of problem behaviour (Woolfson et al., 2011). Parents who believe that their son/daughter's disability is the cause for the problem behaviour may believe they have no control over altering their son/daughters' behaviour. This attitude is likely to maintain problem behaviour because parents may not teach their son/daughter the skills to regulate their own behaviour. For example, children who had higher rates of aggression, social problems, rule-breaking and other problem behaviour, than other children with disabilities, had parents with the belief they had low controllability over their children's behaviour (Woolfson et al., 2011). Parents are most commonly the primary caregivers for young adults with disabilities living at home. Thus, as parental attitudes may contribute to maintaining problem behaviour, it is important that interventions also target parental attitudes to ensure that they contribute to problem behaviour in a positive way, rather than the maintenance of it. Therefore it is important that parents are involved in the treatment process for improving their son/daughters behaviour.

Impact on the Individual and their Family

Day placement centres teach adaptive skills that the individual may eventually use to secure employment, or improve other areas of their wellbeing (West & Patton, 2010). However, individuals with multiple disabilities are more likely to be in day placement workshops because of their high dependency on others for meeting their daily needs, than to hold a job and contribute to society. There is a probability, though, that an individual with multiple disabilities and problem behaviour will be denied access to day placement centres because of their problem behaviour (West & Patton, 2010). Young adults with multiple disabilities and problem behaviour are less likely to develop skills that lead to their employment in competitive workplaces (i.e., receive wages/income for working) or enrolment at college/university (Taylor & Seltzer, 2011). The USA rate of young adults with multiple disabilities and young adults with one disability attending day placement was 73% and 6%, respectively. In comparison, the rate of attending tertiary education for people with multiple disabilities versus people with one disability was 2% and 47% percent, respectively (Taylor & Seltzer, 2011). Although the majority of people with disabilities hold some form of work placement or activity during the day, the higher the level of support an individual requires, the less likely they are to be employed in the workforce (Statistics NZ, 2008). During working hours, adults with disabilities may attend day placements as an alternative to employment. Day placements are sheltered workshops where individuals go into the community in groups for brief periods of time to complete jobs and return to the centre to do day activities until another job in the community arises. The purpose of day placement is to teach people with disabilities adaptive skills that may be able to use to gain employment. However, people with multiple disabilities and challenging behaviour may have even more difficulty accessing placement in day activity centres (West & Patton, 2010). Day placement services try to maintain a positive and supportive learning environment and the presence of

problem behaviour (e.g., behaviours such as hitting a head against a wall and floor and scratching others to gain attention), may contest with this. This means that individuals with challenging behaviour may both struggle to secure employment competitively and risk being denied access to day placement; both outcomes being detrimental for the young adult with disabilities (West & Patton, 2010).

Looking after an adult with multiple disabilities at home can reduce individual and family financial well-being. Mothers typically assume the role of primary caregiver and fathers earn the family income (Capales & Sweeney, 2010). This means that two-parent families who have an adult with a disability living at home, generally live off one parents' income. This can reduce financial wellbeing for families, as adults with disabilities often incur additional medical costs associated with their disabilities (Capales & Sweeney, 2010). Some families may be entitled to a subsidy or receive full funding for equipment or services. However, funding from the government will depend on the family's financial situation and their equipment and other needs. Some of the additional costs experienced by families with adults with multiple disabilities may include the purchase of a van to transport their family member if they are in a wheelchair, transport costs to specialists or hospitals (e.g., petrol, bus fare), vehicle maintenance costs (e.g., registration, warrant of fitness), employment of support workers, medical bills, accommodation, or household items such as electric can openers (Ministry of Health, 2013a; Nikora, Karapu, Hickey, Te Awekotuku, 2004). One parent described their family financial situation as: "*just getting by*" (Capales & Sweeney, 2010, p. 68). Looking after an adult with a disability at home can greatly diminish the potential earnings two fully employed parents could bring and families have stated that a greater income would improve their lifestyle and happiness. Therefore, parents may feel more stressed and unhappy because of the added financial strain of looking after an adult with disabilities at home (Capales & Sweeney, 2010).

Parents coping with such a situation may not have much of a social life outside of their own home and this can create stress in the marital relationship. Parents tend to have a reduced social life because they cannot get anyone to mind their son/daughter with disabilities. Some reasons why parents often cannot get anyone to look after their son/daughter may be because the parent is uncomfortable with their son/daughters' behaviour, or the personality of the individual with disabilities conflicts with meeting new people or having other people in their house, or that the parents are not comfortable leaving their son/daughter at home with anybody other than themselves (Power, 2008). Despite not being able to get out of the house often, having a social life was identified as an important factor to improve parents' quality of life. One parent explained *"I work part-time and whilst it would be easier to stay at home I do enjoy the social contact of work"* (Capales & Sweeney, 2010, p. 69). In two-parent families it is not uncommon for one parent to stay home and look after their family member while the other parent goes out and socialises. This means that parents are often socialising alone and not together as a couple, which can create stress in the marital relationship. When the person with disabilities is involved in the social activity, parents get to spend some quality time together as a couple, as well as with their son/daughter. One parent stated: *"the personality of our child makes us happy...poor marital relationships and anger create stress"* (Capales & Sweeney, 2010, p. 69). Couples with an adult with multiple disabilities living at home are often left to socialise on their own. This means that couples spend less quality time together to develop and strengthen their relationship. Poor marital relationships may increase the level of stress experienced in an already stressful care giving role. As a result, the combination of poor marital relationships and stress can increase the likelihood of marital breakdown and placement of their family member into fulltime permanent care facilities (Nankervis, Rosewarne & Vassos, 2011).

Parents are often juggling multiple roles when caring for an adult with disabilities at home and this can affect the carer's psychological wellbeing (Nankervis et al., 2011; Rowbotham, Carroll & Cuskelly, 2011). Some of the roles parents may try to juggle in addition to being a parent to their son/daughter with disabilities could include being a spouse, an employee, a daughter or son, and a parent to their other children or dependents. Trying to manage multiple roles can become a chronic stressor for parents when they are faced with the additional effects of care giving. In particular, chronic stress experienced by parents of young adults living at home, may increase the likelihood that the parents develop poor mental health, for example depression or anxiety (Rowbotham et al., 2011). The prevalence of depression and anxiety in caregivers tends to increase as the level of challenging behaviour displayed by individuals with multiple disabilities increases (Walden, Pistrang & Joyce, 2000). Although many people with or without dependents with disabilities are trying to manage multiple roles, parents who are looking after a family member with disabilities at home are particularly susceptible to developing chronic stressors as a result of the demands of the care giving role (Power, 2008). The general care giving tasks that may be required of parents looking after a family member with multiple disabilities can be physically demanding. For people with intellectual and physical disabilities, parents may need to assist with feeding, dressing and lifting (Power, 2008). Although assisting with daily cares can be physically exhausting, constant attendance and supervision of a family member with disabilities can be the most physically and mentally draining (Power, 2008). As a result, care givers of people with multiple disabilities may find that the need for constant supervision or attendance of their family member may mean that they themselves have interrupted sleep patterns and feel more tired. It is tiredness that contributes to reduced quality of performance of some or all aspects of multiple roles and chronic stress in the additional roles expected of parents. An example of how the care giving role can contribute to chronic stress and

exhaustion can be seen in *Figure 1*. *Figure 1* represents the flow on effect that sleep deprivation has on the multiple roles that parents need to manage and how care giving often leads to sleep deprivation. For example, sleep deprivation can lead to tiredness, tiredness can lead to poor performance in other activities, poor performance leads to arguments about poor performance, arguments create stress, chronic stress can lead to issues with anxiety and depression, and the combination of all of these factors can contribute to poor sleep quality. Therefore, the transactions between a caregiver and their environment may have a downward spiral effect that ultimately leads to poor psychological health and wellbeing as a result of chronic stressors (Rowbotham et al., 2011).

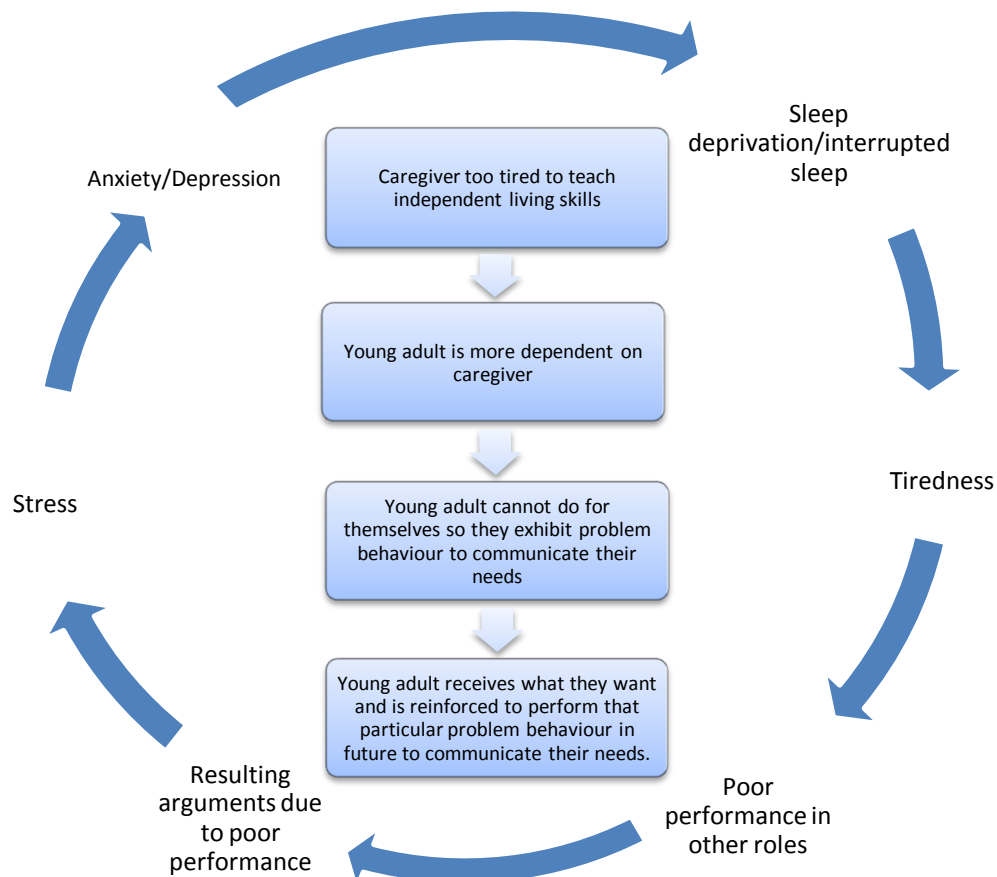


Figure 1. Caregiver and young adult interactions and reactions. The outer cycle represents the transactions that may occur between a caregiver and their environment. The

inner flow diagram represents how the outer cycle affects the individual with disabilities
(*Created by Researcher, Corrina van Eyk*).

Siblings of individuals with multiple disabilities will likely come to assume some responsibility in the support of and daily care of their sibling with disabilities, whether for emotional, physical or social support. This is because sibling relationships are usually the most enduring relationships that a person will experience in their lifetime (Dew, Balandin, & Llewellyn, 2008). Although siblings play an important role for the person with disabilities, they themselves may feel neglected or harbour negative feelings as their parent spends more time with the sibling with disabilities (Nankervis et al., 2011). Parents are also concerned that the lack of time they have spent with their other children will result in poorer psychosocial wellbeing or reduced academic success for the siblings of people with disabilities (Nankervis et al., 2011). This is particularly concerning because people with multiple disabilities are now more likely to outlive their parents, thus the primary care giving role is more likely to fall onto the siblings of the person with multiple disabilities, following death or illness of the parents. However, if siblings feel slight resentment toward their parents for spending less time with them, they may be less inclined to pick up any care giving duties to help their sibling with disabilities when the parents can no longer help. This can lead to problems with suitability of caregivers when parents reach old age as siblings may not want to take over care giving duties when their parents can no longer look after the individual with disabilities. This means that parents may be faced with the decision to place their family member into permanent residential care when they reach old age and siblings may feel less obliged to be involved in the daily life of their sibling with disabilities.

People with multiple disabilities and problem behaviour may have reduced opportunities to participate in the community (Capales & Sweeney, 2010). Parents believe that participating in the community is an important aspect of having a good quality of life and

parents enjoy participating in the community with their son/daughter with disabilities (Capales & Sweeney, 2010). Some of the activities parents like to do with their son/daughter include swimming, going to the movies, and walking. Although some families expressed the importance and enjoyment of taking their family member into the community, not all families feel comfortable doing this because of their son/daughter's problem behaviour (Capales & Sweeney, 2010). Behaviour problems may endanger the individual themselves or other people, particularly because the most common forms of problem behaviour in people with multiple disabilities are aggression and self-injury (Smith & Matson, 2010). For this reason, parents may feel less inclined to take their son/daughter with problem behaviour into the community. One parent stated *“because of my child's behavioural problems it is quite difficult to go out in public-less hassle if you stay at home”* (Capales & Sweeney, 2010, p. 69). Reduced opportunities to participate in the community may be detrimental to the person with multiple disabilities as they have less access to learning adaptive skills that would promote their independence. As a result, mothers and their son or daughter may experience social isolation and the individual with multiple disabilities may miss out on opportunities to learn adaptive skills through participation in the community (Capales & Sweeney, 2010).

Respite Care

There are multiple support services available for both young adults with disabilities and caregivers of young adults with disabilities. Some of the services offered include behaviour support (i.e., tailored intervention plans for individuals referred for challenging behaviour), community day placement (i.e., day services for people with disabilities who cannot find employment), community residential support services (e.g., assistance with daily living in community settings), and respite and carer support (i.e., individuals stay in community-residential settings to provide short-term breaks for their caregivers) (Ministry of Health, 2013). Respite care has been *“designed to provide short-term breaks for the carers of*

a disabled person, while also providing a positive, stimulating and worthwhile experience for the disabled person” (Ministry of Health, 2013b). The aim of respite care is to give caregivers some time to recuperate from the demands of the care giving role so that they can continue to look after their family member at home long-term, as opposed to relinquishing their family member to permanent residential care when the demands of care giving role become too much (Nankervis et al., 2011). One of the most common forms of respite care are short breaks provided by an agency in a residential setting away from home (e.g., hours, overnight, or a couple of days in length) (Capales & Sweeney, 2010). Respite care can be planned (i.e., specific periods agreed upon by the individual, their family and the service) or in cases of crises situations, unplanned emergency respite (e.g., family emergency). One of the main features of respite care is that the service represents an ‘out of family’ experience. That is, individuals with disabilities can experience living away from home in an environment that is both stimulating and worthwhile (e.g., staying with friends or relatives) (Ministry of Health, 2013b).

What are the benefits of respite care to the individual and their family? Respite care gives families the freedom to pursue activities they would normally forgo because of the time spent looking after their child. Families use the time their son or daughter is in respite to spend time with other family members, sleep, or catch up on housework (Chan et al., 2012) or develop and improve their social networks (Nankervis et al., 2011). While their son or daughter is in respite, parents are able to catch up on tasks that may have been neglected due to the demands of care giving and this may reduce stress and increase relaxation. Having less stress in general would help parents to cope with looking after their son or daughter in their own home (Walden et al., 2000). One parent stated that having respite care would reduce stress, saying *“I would be free as a bird. There would be no stress with him not being here. My life is run around him – he dominates my whole life”* (Walden et al., 2000, p. 70). In

addition, parents stated that their social lives were “*less/much less than they would like it to be*” (Capales & Sweeney, 2010, p.68). Using respite care services means that caregivers may be able to reduce chronic stress (Walden et al., 2000) and reduce social isolation (Nankervis et al., 2011). This is important as both chronic stress and social isolation have been shown to contribute to the development of mental illness (Nankervis et al., 2011; Rowbotham et al., 2011). Therefore, having access to respite means that the family can utilise some of the time that would normally be spent care giving, looking after family and personal wellbeing (Capales & Sweeney, 2010; Chan et al., 2012).

Some families are in such a need of a break that they avail themselves of respite care services even though sometimes this is equally or even more stressful than continued care of their family member (Capales & Sweeney, 2010). Having respite services take responsibility for the care of a family member can be stressful for families who have looked after their family member for their whole lives and are now temporarily leaving the responsibility of care to someone else. It is understandable then that some families are concerned with the quality of care that their family member receives in respite and the provision of services (Chan et al., 2012). One of the concerns the family may have are whether staff are qualified and well trained, particularly for individuals with challenging behaviour (Chan et al., 2012). Families feel that staff should have adequate training to handle challenging behaviour and promote the wellbeing of their family member. Additionally, some families may feel guilt for placing their family member in respite care (Capales & Sweeney, 2010). Thus, families may have more concerns about the quality of care their family member receives when they are not in control of their son or daughters care. Therefore, it is important that families feel assured of the quality of the respite service and the staff members, as this can reduce the amount of stress the family experiences when leaving their family member with the respite service and they can maximise the benefit of having time to themselves (Capales & Sweeney, 2010; Chan

et al., 2012). Although, some families would prefer to look after their family member themselves without needing respite services, they may reluctantly seek such services because caring for their family member with multiple disabilities and challenging behaviour has become too stressful.

Māori Perspective of Disability and Intellectual Disability

Māori may prefer to seek respite through the help of a member of their whānau rather than through a disability support service because it helps them to avoid the negative label associated with ‘disability’. Part of the reason Māori prefer to seek help within their own whānau may be because of some of the cultural barriers Māori experience accessing disability support services. Some of the cultural barriers and concerns Māori have about disability services include the lack of Māori support staff and the dominance of non- Māori staff in the service. Māori people have acknowledged that there should be “*suitable Māori-based respite*” to suit the needs of Māori (Nikora et al., 2004, p. 41). At present, if there is no-one deemed suitable within the whānau, or the family member with disabilities does not want to be cared for by anyone other than their primary caregiver, Maori tend not to avail themselves of support services; instead they will care for their family member themselves (Nikora et al., 2004).

Respite services emerged to give parents a break from care giving to support families to keep looking after their son/daughter in their own home and try to increase the individuals’ opportunities for learning (Capales & Sweeney, 2010). In particular, respite services aim to provide a wider range of opportunities for social participation in the community (Cotterill, 1997). However, some families seem to have higher demand for these services than other families. Characteristics that increased the likelihood families would be in demand of respite care include severity of challenging behaviour, severity of disabilities, and the level of dependency on care giving, family stress, and the desire of caregivers to regain a social life

(Chan et al., 2012). What is problematic is that some families are almost dependent on respite to get by with their own lives. One parent explained: "*outside of respite services I have no help, we have no public transport suitable for a wheelchair...we cannot get out much*" (Capales & Sweeney, 2010, p.69). In addition, parents have requested "*extra respite as the need presents*", and "*more respite care on a more regular basis*" (Capales & Sweeney, 2010, p. 68). Although respite services provide a break for families, respite may be promoting dependence on their services long term, rather than tackling the underlying issue. The underlying issue being people with disabilities need to harness the skills to live as independently and with the least amount of restriction as possible. Though, the opportunity to learn to be independent is limited when a person has problem behaviours that restrict their access to services and opportunities to learn these adaptive skills.

To conclude, problem behaviour reduces the quality of life of people with multiple disabilities and their families (Capales & Sweeney, 2010; Chan et al., 2012). Having problem behaviour means that the young adult with multiple disabilities may have reduced access to day placement services (West & Patton, 2010), learns fewer adaptive skills (Matson, Dempsey & Fodstad, 2009), has reduced opportunities to participate socially or in the community (Capales & Sweeney, 2010), and an increased dependence on care givers to look after them (Power, 2008). Families on the other hand may experience social isolation, reduced financial wellbeing (Capales & Sweeney, 2010), poor marital relationships (Nankervis et al., 2011), and poor psychological wellbeing (Power, 2008). The amount of time spent with the family member with problem behaviour at home increases because of the restrictions problem behaviour has on the ability to leave the house and thus families will likely demand more respite (Chan et al., 2012). Increased demand for respite could create stress for both respite and day service providers as staff may not have had the appropriate training or skills to handle challenging behaviours (Chan et al., 2012) and as a result, day

service providers may refuse access to people with severe challenging behaviour (West & Patton, 2010). Therefore, reducing serious problem behaviour in young adults is a priority for families as well as respite service providers. Strategies to reduce problem behaviour and studies of their effectiveness are reviewed in chapter two.

CHAPTER TWO

LITERATURE REVIEW

Common Approaches to Behaviour Problems

The rise in the use of functional behavioural assessment and functional analysis in recent years has meant that there are an increased number of reinforcement-based strategies to increase the frequency of positive behaviours implemented in interventions, meanwhile the use of punishment procedures to reduce undesirable behaviour have decreased (Hanley, Iwata & McCord, 2003). The term *functional analysis* was initially used by B.F. Skinner to describe cause-and-effect relationships that occur between behaviour and environment (Hanley et al., 2003). More recently, behaviour analysts have come to use the term *function* to mean what purpose the behaviour serves for the individual and/or what effect the behaviour has in response to an event or stimulus. This can also mean identifying the positive skills the individual already possesses. Training a new skill or behaviour requires more powerful and frequent reinforcement than for behaviours that are already in the individual's skill set (Umbreit, Ferro, Liaupsin & Lane, 2007). As a result, the approaches to intervention have been more reinforcement-based, rather than punishment, as the core element of functional analysis is the identification of factors that reinforce behaviour (i.e., reinforcers) and thus it is proposed that the reinforcers can be altered to change the behaviour. Prior to the use of functional behavioural assessment, the main approach to handling problem behaviour in individuals with intellectual disabilities was to exert strong contingencies of punishment (Hanley et al., 2003). In the last 50 years, evidence-based practices have moved from chemical restraint and operant-conditioning as a main approach to reduce challenging behaviour to person-centred and needs-driven approaches to reduce the challenging behaviour of people with disabilities (Campbell, Robertson & Jahoda, 2014). Since then, the

emergence of functional behavioural assessment has meant that the factors that contribute to the maintenance of problem behaviour can be more accurately identified and the establishing operations or consequences can be altered to reduce problem behaviour (Hanley et al., 2003). For example, by indentifying and understanding what contingencies may worsen the problem behaviour, we may be able to alter these contingencies to reduce problem behaviour.

Self-determination is best described by the following four key characteristics, self-regulation, autonomy, self-realisation and psychological empowerment (Wehmeyer & Schwartz, 1997). Behaviour is self-regulated if a person evaluates a situation and decides which of their skills they will require to carry out an action. Behaviour is autonomous if a person acts in accordance with their own interests, abilities or preferences independently. Behaviour is self-realised if people use the knowledge they have of their own strengths and weaknesses to act in a manner that allows them to get the most out of having this knowledge and lastly, behaviour is psychologically empowered if people have the belief that they can influence the outcome of events in their environment with their skills, (Wehmeyer & Schwartz, 1997). The acquisition of self-determination may include increasing opportunities for people to make choices and decisions, set goals and solve problems (Wehmeyer & Schwartz, 1997). Therefore, it is important that the approach in this study largely involves the participant and provides them the opportunity to make their own choices in the types of intervention they would like to receive.

Self-determination or the ability to be autonomous and have the freedom to make choice is a key element for services when working with people with disabilities (Algozzine, Browder, Karvonen, Test & Wood, 2001). In particular, the *Code of Health and Disability Services Consumers' Rights* states that people with disabilities have the right to their independence, dignity, make informed choices and give their informed consent (Health and Disability Commissioner's Office, 1994). Thus, it is essential that people with disabilities can

contribute their opinions and views on the type of intervention they would like to receive. Historically, approaches to intervention saw participants undergo periods of intense reinforcement or punishment to change their behaviours, and the individual with disabilities had less autonomy and choice in the treatment process (Hanley et al., 2003) compared with the current approach where the participant is the main agent in the processes of treatment. Adults with disabilities have emphasised that feeling more self-determined would increase their quality of life and increases in self-determination have been associated with positive outcomes. One of the positive outcomes that have occurred with increases in self-determination is a decrease in the severity of challenging behaviour exhibited by individuals with disabilities (Hatton, Emerson, Robertson, Gregory, Kessissoglou & Walsh, 2004). A second outcome is that the presence of self-determination in young adulthood has been predicted to produce better outcomes later in life (Wehmeyer & Schwartz, 1997). One of those outcomes being that adults with disabilities were able to find and secure paid employment themselves, thus allowing them to both feel and be more independent. Therefore, integrating self-determination into treatment processes has had positive outcomes for people with disabilities and challenging behaviour (Hatton et al., 2004) and people with disabilities feel that their quality of life is improved when they have the freedom to make their own choices (Wehmeyer & Schwartz, 1997).

The intervention approaches that are discussed in this review are functional analysis, functional assessment and positive behaviour support interventions such as reinforcing existing behaviour, teaching replacement behaviour and functional communication training.

Understanding Problem Behaviour

Functional Analysis

The purpose of functional analysis is to use experimental analysis to ascertain the factors that maintain behaviour. Discriminated operants are operant responses that have antecedents (i.e., motivational or setting events) and consequences (i.e., reinforcers or punishers). Functional analysis identifies the antecedents and consequences for any specific behaviour, while various observational techniques establish the rate and topography of the behaviour. Functional analysis involves the direct observation of problem behaviour on manipulation of independent variables. Functional analysis is a more reliable procedure than a functional behaviour assessment because functional analysis uses controlled experiments to identify causal relationships between variables that may be responsible for maintaining problem behaviour (Dixon, Vogel & Tarbox, 2012). However, one of the major concerns researchers have with controlled experiments in a functional analysis is the potential to induce harm to an individual during assessment (Beavers et al., 2013). Target behaviour may be provoked and temporarily reinforced in order to accurately determine the antecedent or setting events that cause the behaviour to occur. This is particularly problematic when target behaviour is aggressive or self-injurious, both of which are the most common forms of problem behaviour exhibited by people with multiple disabilities (Smith & Matson, 2010).

Functional analysis plays an essential role in the planning of intervention processes for problem behaviours because it can help to identify the factors that maintain or underlie behavioural problems and assess the likely effectiveness of treatment components in targeting particular behaviours. For example, a functional assessment may identify that the reason for an individuals' aggression is to escape social situations. Thus, interventions that target social avoidance, rather than aggressive behaviours will more likely result in the individual learning adaptive skills, such as how to deal with social situations, rather than simply learning

techniques to reduce their aggression (Beavers et al., 2013). However, a full functional analysis can be more time consuming than functional behaviour assessments as each experimental condition needs to be implemented over several sessions to ensure that the behaviour is indeed occurring as a result of the manipulated condition. A brief functional analysis is usually implemented over 90-minutes and the sessions for each experimental condition are usually conducted once or twice (Dixon et al., 2012).

Beavers and colleagues (2013) indicated that several studies had assessments that produced false-positive outcomes when carrying out the tangible FA condition despite any indication the behaviour may have been maintained for tangible reasons (i.e., through an interview or direct observation of the behaviour). This means that some studies concluded that the individuals' problem behaviour was being maintained because they were hoping to gain something tangible, though this hope was incorrect. Beavers and colleagues (2013) suggested that some of these assessments may have produced a false-positive outcome because the introduction of a preferences assessment prior to functional assessment exposes the individual to tangible rewards prior to identifying the factors that maintain the problem behaviour. Therefore, because an individual has already been exposed to a tangible reward, the likelihood that their problem behaviour will cease is high when they are presented with a tangible reward that they have already been exposed to and indicated that the particular tangible reward is of preference to them. Therefore, functional assessment (e.g., interviews with informants) may be useful in filtering out test conditions that might otherwise indicate functions for behaviour when there is none (Beavers et al., 2013). This is potentially a strong limitation of using experimental manipulation with functional analysis to identify functions for problem behaviour.

Functional Assessment

Functional behavioural assessment is used by professionals to identify the communicative function the behaviour has for the individual. This approach is based on the model that a behaviour which is maintained serves a purpose (i.e., has a function) for the individual. The functional behavioural assessment seeks to identify and understand that purpose. For example, a tantrum might serve the function of communicating a desire to avoid engaging in a particular activity. This method of communication is more likely to be identified if the individual has limited communicative behaviours. The main methods of measurement for functional behavioural assessment are indirect and descriptive measures. Indirect measures of behaviour may take the form of interviews, questionnaires, or rating scales used with parents, vocational staff, respite staff or other people also highly involved in the participant's life. Descriptive methods involve direct observation of the behaviour and recording the frequency of behaviour without manipulating any conditions. Direct observation also includes collecting information on the circumstances in which the behaviour occurs. This includes setting, time of day, and situational factors, such as the health of the individual, the other people present, and so forth. In addition, the events that occur immediately before the behaviour (e.g., giving the individual instructions), during the behaviour, and following the behaviour, are recorded. By conducting a functional behavioural assessment, the researcher is able to produce well-informed hypotheses for the function of the behaviour. A functional behaviour assessment may narrow down the types of conditions that are maintaining the behaviour through an interpretation of the indirect assessments that were conducted with people whom the participant spends a significant amount of time with. The researcher may make a hypothesis about the type of condition that they believe is maintaining the behaviour from indirect assessments and then use functional analysis to confirm their hypothesis. Therefore, conducting a functional behaviour assessment may eliminate the need

to experiment with multiple conditions and as a result may be more likely to be successful in transitory environments, such as respite care facilities.

Changing Problem Behaviour

Teaching Replacement Behaviour

Teaching replacement behaviour can be defined as teaching or reinforcing a behaviour that serves the same functional purpose as the problem behaviour that is being replaced (Umbreit et al., 2007). There are three main methods to teaching replacement behaviour. 1) Providing alternatives, 2) improving the environment, and 3) adjusting contingencies. In method 1) providing alternatives, the therapist teaches the individual skills as a method of reducing shortfalls in the individual's learning that inhibits them from functioning successfully in the environment where the problem behaviour occurs. For example, the therapist may teach the individual skills in communication or emotional self-regulation. In method 2) improving the environment, the therapist aims to alter aversive antecedent events so that they are no longer aversive and increase opportunities for positive reinforcement for appropriate behaviour. For example, using a token economy schedule for every time the participant raises their hand instead of shouting out in class. In method 3) adjusting contingencies, the focus is on identifying the consequences that initially reinforced the problem behaviour and using these consequences to reinforce the replacement behaviour. For example, if the individual originally screamed to get access to the computer and the caregiver allowed computer access to stop the individual from screaming, adjusting the contingencies would mean that the caregiver would not allow the individual access to the computer when they are screaming and instead allow them computer access only if they politely said the word "computer" (Umbreit et al., 2007).

Functional Communication Training

People with multiple disabilities often lack the communicative skills to convey their needs and wants to other people (Kurtz, Boelter, Jarmolowicz, Chin & Hagopian, 2011). As a result, people with multiple disabilities are more likely to engage in problem behaviour to compensate for their lack of communicative skills and maintain this behaviour through reinforcement. Functional communication training identifies that poor communication skills contribute to problematic behaviour and attempt to teach alternative appropriate communicative responses as a way of getting the individual to communicate and satisfy their needs. Functional communication training is a highly individualised intervention and there are 6 main steps that make up the framework for the intervention. The steps are: 1) conduct functional analyses to identify the purpose for the behaviour; 2) select a communication response that is based on the individuals' communication skills and/or presence of an augmentative communication device; 3) teaching procedure to develop the selected communication response; 4) use of differential reinforcement to reinforce communication response and extinction for problem behaviour; 5) addition of other treatment modules, as required; 6) programming to enhance generalisation to other settings, people, and reduce the need for reinforcement (Kurtz et al., 2011).

Augmentative and Alternative Communication

Augmentative and alternative communication (AAC) devices are generally used with people with limited or no verbal communication as an alternative method of communicating their needs without using verbal or written communication (Lancioni, O'Reilly, Singh, Sigafoos, Oliva, Alberti, Carrella, Didden & Lang, 2013). In New Zealand, many individuals with intellectual disabilities have successfully learnt to use AAC devices to help them communicate (Sutherland et al., 2014). Their success using AAC devices may be largely

dependent on two main factors. One of these factors is that an intervention is put into place that provides the individual with good training and teaches the individual how to properly use the AAC device. The second factor is that the people who are involved in working with or alongside the individual have selected an AAC device that is appropriate for them to use. However, there are still a significant number of adults with intellectual disabilities in New Zealand who have little means of communication (e.g., pointing, gestures) who could probably benefit from using an AAC device. Sutherland and colleagues (2014) stated that 29% of adults living in New Zealand with significant communication disabilities did not have an AAC device. Part of the problem of the lack of implementation of AAC devices is that few people who work with people with disabilities know how to use them. Sutherland and colleagues (2014) reported that 24% of staff working with adults with disabilities has had some experience teaching adults to use AAC devices. On the other hand, children attending special education schools were more likely to have access and receive training for the use of AAC devices than adults. A large percentage of people who do use AAC devices or care for people that use them have requested more training on how to use the devices. In particular, Sutherland and colleagues (2014) stated that training support staff who work with adults with intellectual disabilities to use and understand AAC devices is especially important as there are few speech-language therapists that do work with adults with intellectual disabilities in New Zealand (Sutherland et al., 2014). Therefore, the use of AAC devices has had good outcomes for adults with intellectual disabilities, although this seems to be dependent on staff and caregivers receiving appropriate training on the use of the device and also allowing individuals to select their own devices that they think will be suitable for them.

Meta-Analyses and Systematic Reviews

A meta-analysis by Kurtz and colleagues (2011) reviewed 28 studies using functional communication training as a method of treatment for reducing problem behaviour in children

and adults with multiple disabilities between the years 1985 and 2009. Each study met criteria for quality experimental control (i.e., treatment effects replicated) and satisfactory treatment efficacy (i.e., 80 % reduction of problem behaviour in relation to baseline data). Of particular interest were the studies with participants over 18-years of age. There were five studies with participants over 18-years of age.

Kurtz et al. (2011) concluded that functional communication training successfully reduced the rate of problem behaviours and increased the rate of alternative behaviours. The methods used in each study were single-subject experimental designs and 84% of the total number of studies reviewed conducted functional analyses prior to intervention. Additional treatment components that were used in combination with functional communication training were shown to be more effective than functional communication training alone. The additional components were extinction (e.g., ignoring), punishment, or other components (e.g., non contingent reinforcement, or choice). Of the 28 studies, two studies used functional communication training as the single treatment component. As a result, the efficacy of functional communication training on its own cannot be determined because of the limited number of studies. However, 21 studies used functional communication training in addition to extinction as a treatment component. Results showed that functional communication training and extinction in combination had exceeded the criteria to be considered a well established treatment for reducing problem behaviour. The combination of functional communication training and punishment were “*probably efficacious*” (Kurtz et al., 2011, p. 2939). This is because seven studies conducted FCT and punishment training, which were two studies short of the nine to be considered well-established. Though, the authors wished to add that the seven studies included many participants and the treatment combination was effective in all cases (Kurtz et al., 2011).

Beavers and colleagues (2013) carried out a meta-analysis on the functional analysis of problem behaviour. Beavers et al. (2013) research follows on from the meta-analysis by Hanley et al. (2003) who conducted meta-analyses between the years 1961 to 2000 on the functional analysis of problem behaviour. Beavers et al. (2013) combines the findings from Hanley et al. (2003) and the findings from their own research between the years 2001 to 2012. Beavers et al. (2013) identified 158 studies between the years 2001 to 2012 had used functional analysis for problem behaviour. Of the 158 studies, 36 studies included adult participants under the age of 65-years old. The majority of studies with functional analysis were conducted with individuals with intellectual disabilities (82%) in settings such as hospital inpatient units (57%), schools (44%) and the participants' homes (16%). In Beavers et al. (2013) the number of studies that used indirect assessments and descriptive analyses were 32 and 39, respectively and 21 studies used both indirect and descriptive analyses (Beavers et al., 2013). Beavers et al. (2013) and Hanley et al. (2003) reported that a small number of studies had used brief functional analysis as an assessment procedure, 13% of studies in both analyses.

Functional analyses have been used more commonly to assess problem behaviours such as aggression (48%) and self-injurious behaviours (37%) (Beavers et al., 2013). The majority of studies carried out functional analysis using the ABC model (92%) where both the antecedent and consequence events are manipulated and the frequency of behaviours were recorded (91%) using partial-interval recording (68%). Studies were more likely to use full assessments to identify factors that maintain the behaviour (86%) meaning that test conditions were presented to participants three or more times and session durations were brief lasting 10-minutes (42%) or 5-minutes (37%). In addition, studies were more likely to use multiple test conditions (92%) to identify the function of behaviours with conditions randomly sequenced (79%). The condition types included social-positive reinforcement

(94%), attention (92%), tangible (51%), social-negative reinforcement (92%) and automatic reinforcement (49%) (Beavers et al., 2013).

Campbell et al. (2014) carried out a systematic review on evidence-based psychological interventions for reducing challenging behaviour in people with intellectual disabilities. The studies located were categorised into a matrix A, B and C with the top of the matrix showing randomised controlled trial studies, the B-level showed studies that were well conducted, though, were not clinical trials and C-level studies were those studies that had widely-held expert opinion, though had not available studies that showed these good quality effects. Campbell et al. (2014) excluded single-case studies from the review. Campbell et al. (2014) located 12 intervention studies that met the matrix criteria between the years 1980 and 2010. Two intervention studies met level A-criteria, four met level B-criteria and six met level C-criteria. The majority of studies involved adult participants with the exception of three studies.

Campbell et al. (2014) explained that interventions that had the highest success rate were interventions that used constructive approaches (e.g., teaching replacement behaviours), implemented active support training for staff and involved the use of specialist behaviour teams. However, Campbell et al. (2014) point out that there is no particular intervention or combination of interventions that effectively reduce challenging behaviours for every individual. Campbell et al. (2014) discusses that the rate of therapeutic change is likely to be slower for people with intellectual disabilities than for adults without intellectual disabilities. As a result, intervention sessions may need to be longer or at a higher intensity for people with intellectual disabilities to produce the same level of therapeutic change as it would for people without intellectual disabilities.

Recent Studies of Interventions for Problem Behaviours

Studies that have been published following the meta-analyses by Beavers et al. (2013) and Kurtz et al. (2011) can provide additional information about effective strategies, particularly studies that have been studied in respite settings. There will be a focus on interventions that have been conducted in a respite-type setting and interventions that have shown good effects within a short duration.

Electronic databases of studies that were published in peer-reviewed professional journals were searched to identify those which reported on the effectiveness of interventions to treat challenging behaviour, and had reported pre- and post- intervention data. Studies needed to include participants with multiple disabilities (i.e., intellectual disability and a co-morbid physical, neurological, developmental or sensory disability) and problem behaviour, with participants of any age, including children. Papers that did not contain psychological interventions (i.e., medication trials) were excluded.

Interventions with Functional Analysis or Assessment

The reputation of functional analysis and assessment has grown in recent years and appears to be more acceptable across a wider range of participants (Beavers et al., 2013). Most of the studies included in Table 2 conducted a functional analysis, assessment or both prior to intervention (Lancioni et al., 2013; McClean, Gray, McCracken, 2007; Stokes & Luiselli, 2009; McClean & Gray, 2012; Wrigley, Khan, Winder, Vollmer & Sy, 2010; O'Reilly et al., 2012; Sansosti, 2012; Pennington, Strange, Stenhoff, Delano & Ferguson, 2012; Travis & Sturmey, 2013; Robertson, Wehby & King, 2013; Davis, Fredrick, Alberto, Gama, 2012; Bloom, Lambert, Dayton & Samaha, 2013; Wood, Ferro, Umbreit & Liaupsin, 2011; Devlin, Healy, Leader & Hughes, 2011; Whitford, Liaupsin, Umbreit & Ferro, 2013; Chezan, Drasgow & Martin, 2014). The former studies illustrate the flexibility of conducting

functional analysis and assessment with a wide range of participants who vary in the type and extent of their disabilities, verbal and functional abilities and age, which ranged from two years and 10 months old (Robertson et al., 2013) to 46-years-old (Travis & Sturmey, 2013).

Alternatively, some authors have forgone functional analysis and assessment in favour of targeting the problem behaviour directly or improving potential skill deficits that may contribute to problem behaviour. The interventions included in Table 2 that did not include functional analysis or assessment included Soares, Vannest & Harrison (2009); Sigafoos, Ganz, O'Reilly and Lancioni (2008); Lancioni and colleagues (2009); Rozenblat, Brown, Brown, Reeve and Reeve (2009); Echeverria and Miltenberger (2013); Adkins, Singh, Winton, McKeegan and Singh (2010); Ingersoll, Walton, Carlsen and Hamlin (2013) and Singh and colleagues (2008). Some of the strategies employed to target problem behaviours in the above mentioned studies included differential reinforcement of lower rates of behaviour for rapid eating behaviours (Echeverria & Miltenberger, 2013), mindfulness training for rapid eating and food consumption (Singh et al., 2008) or aggressive thoughts and behaviours (Adkins et al., 2010), and interventions with specific goals such as teaching social imitation training to enhance social skills (Ingersoll et al., 2013) or teaching communication skills using a speech generation device (Sigafoos et al., 2008). The use of functional assessment or analysis of behaviour may have been less relevant in the majority of these studies because the focus of each intervention was to increase an area of functioning rather than why the behaviour may have occurred.

The use of functional analysis in the assessment of problem behaviours for individuals with intellectual disabilities has been considered to be the only significant variable in predicting the success of treatment (Didden, Duker, & Korzilius, 1997; Scotti, Evans, Meyer, & Walker, 1991, as cited in Chowdhury & Benson, 2011). However, the majority of the studies that did not include a full functional assessment or analysis also had good effect sizes

across participants and interventions (Adkins et al., 2010; Echeverria & Miltenberger, 2013; Lancioni et al., 2009; Sigafoos et al., 2008; Singh et al., 2008; Soares et al., 2009) or good effects with one or more participants or target behaviours (Ingersoll et al., 2013; Rozenblat et al., 2009). Therefore, it is possible that interventions that target the problem behaviour or skills deficits, without the identification of the function may also be effective. However, while problem behaviour may be reduced, one of the critiques of strategies such as differential reinforcement of low rates is that it may not eliminate the problem behaviour entirely (Chowdhury & Benson, 2011). In comparison, functional assessments and analysis may assist intervention selection by identifying behaviours that are functionally equivalent to the problem behaviour (Cooper, Heron & Heward, 2007, as cited in Chowdhury & Benson, 2011).

Interventions in Respite-Type Settings

The research on interventions conducted in respite care facilities is limited and thus interventions in *respite-type* settings were sought. Respite-type settings for young adults may include educational settings and workplaces because of the similarities shared with respite-care agencies, particularly the set periods of time in which service users attend. For example, attendees may spend up to five days per week for around six hours per day in these settings. Eighteen of the 24 studies reviewed in Table 2 were conducted in educational settings (Chezan, Drasgow & Martin, 2014; Wrigley et al., 2010; McClean, 2007; McClean et al., 2012; Stokes & Luiselli, 2009; O'Reilly et al., 2012; Sansosti, 2012; Pennington et al., 2012; Bloom et al., 2013; Davis et al., 2012; Rozenblat et al., 2009; Wood et al., 2011; Devlin et al., 2011; Whitford et al., 2013; Sigafoos et al., 2008; Lancioni et al., 2009; Lancioni et al., 2013). These settings included day placement and care centres for adults, special education and mainstream school classrooms for children and adolescents, and preschool for young children.

A study of particular interest was an intervention by Wood and colleagues (2011). Wood et al. (2011) shared the most similarities with the respite care setting of all of the studies reviewed in Table 2 because participants attended the preschool three days per week for a period of three hours per day, in comparison to other more permanent settings (e.g., day placement five days per week). Wood and colleagues (2011) implemented an intervention with three children aged between three and five years old with developmental disabilities and challenging behaviour at an inclusive preschool. Each of the participants engaged in disruptive behaviours during circle time and some centre activities (e.g., crying, lying on the floor, touching other peers, absconding from the assigned area). The replacement behaviours that were identified using functional assessments with each of the participants included 'on-task' behaviour and involved following instructions, staying within the assigned area and engaging in the assigned task.

The results of the study by Wood et al. (2011) showed that on-task behaviour increased from 20 – 55 percent at baseline to an average of 68% for Mark; 0- 20 % at baseline to an average of 81 % during the intervention sessions for Doug and 0 – 30 % at baseline to 99% during intervention sessions for Paul. Treatment effects were maintained at follow-up sessions with average rates of on-task behaviour for each participant at 84%, 84% and 73% of the sessions. The authors concluded that the success of the intervention was largely associated with treatment integrity. The addition of treatment integrity data highlighted the importance of observing the quality of intervention implementation and that without constant observation of treatment quality, the intervention may have been incorrectly deemed to be ineffective (Wood et al., 2011). This is an important finding for the implication of interventions in settings where several people may be responsible for implementing the intervention, for example in a respite setting.

Although the studies conducted in schools resemble respite-type settings, the participants in school settings are normally children or adolescents. As a result, there may be other variables that confound research conducted in these settings with children as opposed to adults. More specifically, many of the behaviours exhibited by adults may have been moulded and reinforced over many more years than the behaviours exhibited by children and thus there may be more difficulties with attempts to interrupt potentially long-standing behavioural patterns. Interventions conducted in day educational and care settings with adults have included the following, Chezian et al. (2014); Wrigley et al. (2010); McClean and Grey (2007); McClean et al., (2012); Stokes and Luiselli (2009); Lancioni et al. (2009) and Lancioni et al. (2013).

One of the above mentioned studies was conducted at a day placement centre with one young adult who engaged in long-standing self-injurious behaviour (Stokes & Luiselli, 2009). The participant was a 26-year old male who had Prader-Willi syndrome and engaged in rectal picking. The individual would perform a “digging” motion using one or two fingers into his rectum (Stokes & Luiselli, 2009, p. 39). Prior to the development of an intervention for the young adult, baseline data on rectal picking, a preference assessment and functional assessment were carried out. Baseline data indicated that rectal picking occurred four times per week and the results of the preference assessment identified that the participant’s preferred activities included socialising with favourite staff, collecting trinkets, and wearing colourful bracelets. The functional assessment was carried out with staff who worked with the participant at the vocational centre and included two scales: the Motivation Assessment Scale (MAS; Durand & Crimmins, 1988 in Stokes & Luiselli, 2009) – a Likert-type scale with 16-items with scores ranging from 1 (never) to 6 (always); and the Functional Analysis Screening Tool (FAST; Iwata & DeLeon, 1996 in Stokes and Luiselli, 2009) – a dichotomous scale (yes/no) with 18-items. The results of the functional assessment identified that the

participant engaged in rectal picking for three reasons: 1) to gain attention, 2) for sensory pleasure, and 3) to escape an undesirable situation (Stokes & Luiselli, 2009).

A functional analysis was conducted with the participant following the functional assessment. Four test conditions, including escape, alone, play and attention were implemented with the participant to identify contexts in which a similar behaviour (i.e., skin picking) was more likely to occur. Test conditions were conducted at the day placement centre consecutively over three days, at five minutes per day. In the 'escape' condition, the staff member gave the participant a vocational task. When the target behaviour occurred, the staff member removed the task from the participant, waited 30 seconds and then re-presented the task. In the 'alone' condition, the participant was alone in the room and there were no consequences for the target behaviour. In the 'play' condition, the participant was given access to use or play with or preferred objects (e.g., magazines) and the staff member would make positive comments every 30 seconds toward the participant. Lastly, in the 'attention' condition the staff member told the participant that they (the staff member) needed to do some work now and then the staff member would only interact with the participant when the participant engaged in the target behaviour, by telling the participant to stop the behaviour. The functional analysis identified that the participant engaged in the target behaviour (skin picking) mostly in the 'attention' and 'alone' conditions. Therefore, the intervention was based on the 'attention' and 'alone' conditions with additional treatment components added (Stokes & Luiselli, 2009).

The intervention was made up of three components (Stokes & Luiselli, 2009). The different components of intervention were time-limited visits to the bathroom, functional communication training and differential positive reinforcement. The time-limited visits to the bathroom involved staff ensuring each visit to the bathroom was limited to five minutes at a time with staff verbally reminding the participant of the time left in the bathroom. The

participant was sometimes agitated when asked to leave the bathroom. The functional communication training component involved teaching the participant to say “*I need one more minute*” when the participant wished to extend their time during their bathroom visit (Stokes & Luiselli, 2009, p. 43). The third component, differential reinforcement, was implemented by verbally praising the participant for appropriate behaviour when using the toilet and offering a choice of preferred activities or objects (based on the prior assessment) following a bathroom visit without the target behaviour occurring. After three consecutive successful bathroom visits without the target behaviour occurring, additional positive reinforcements were introduced, including community outings with favourite staff (Stokes & Luiselli, 2009).

The results indicated that the frequency of target behaviour was initially erratic at baseline and early in the intervention phase and then decreased to zero during intervention and remained at zero from week 15 through to the follow-up phase (i.e., ABC design 40-weeks total). The results had positive implications for the participant. The participant communicated that he was being “safe in the toilet” (Stokes & Luiselli, 2009, p. 44) and spoke proudly of the rewards he received throughout the intervention. Specifically, staff were more eager to work with the participant, and that the elimination of problem behaviour meant the participant was able to engage in more activities in the community (Stokes & Luiselli, 2009). Although the intervention was fairly long in duration (i.e., 40 weeks), the results suggested the participant’s long-standing behaviours were able to be modified successfully and then maintained.

One of the challenges of conducting interventions in respite settings is that service users spend limited time at the facility (Capales & Sweeney, 2010) and consequently, more time in other settings (e.g., home, work placement). This means that respite users may have more exposure to environments where long-standing existing behavioural patterns are reinforced and any new skills or training conducted in a brief, short-stay setting is

disregarded. Few studies conducted in school or day placement settings have reported on the generalisation of behavioural skills or changes taught in one setting across other settings of which the participant is actively involved. One such study that did report findings on the generalisation of skills taught in a brief intervention was conducted by Travis and Sturmey (2013).

The study by Travis and Sturmey (2013) was conducted with participants who resided in a forensic locked facility. This study does not represent a respite-type setting. However the intervention did show some promising data on the generalisation of behavioural training and generalisation may be an important component of skills training specifically in respite settings where individuals spend a limited and often brief amount of time. Travis and Sturmey (2013) conducted a multiple-baseline study across three adults with mild intellectual disabilities and aggressive behaviours (e.g., slapping, kicking, throwing objects) who were all able to communicate verbally. The main aim was to teach the participants alternative and appropriate ways of responding to events that triggered aggression. Three of the staff who worked at the facility were selected to participate in a behavioural skills training programme and were taught how to directly teach the alternative behaviour skills to the three participants. All sessions were conducted in the residential and vocational buildings within the forensic facility.

Travis and Sturmey (2013) reviewed the participant's records from the previous 12 months to identify antecedent stimuli that appeared to trigger the participant's aggressive responses and the consequences that followed the aggressive behaviours. Once the authors had listed 15 - 20 potential antecedents for aggressive behaviour, the authors presented the antecedent stimuli to the participant and recorded whether the stimuli resulted in an aggressive response. The authors presented the participant with one of the identified antecedents once every 10 minutes over a 60 minute period. If the antecedent stimuli resulted

in an aggressive response on more than 20 percent of occasions, the antecedent stimuli was considered to be aggression-provoking. When the author had identified 10 antecedent stimuli that provoked an aggressive response, the list of stimuli was split into two. Five antecedent stimuli were used in behavioural skills training and the other five antecedent stimuli were used for generalisation probes.

The participants in the study had existing behavioural strategies in place in the form of a token economy system to promote positive behaviours (Travis & Sturmey, 2013). The staff involved in the study continued to use the token economy system in accordance with the behavioural skills training. Staff would provide verbal praise (e.g., “well done”) and a token for use of appropriate replacement behaviours and the immediate removal of tokens following an incorrect response to aggression-provoking stimuli. The authors conducted observations of staff use of the token economy system to ensure that consequences were delivered appropriately. The authors provided feedback and modelled correct uses of the token economy system following any observation of incorrect use of consequences in the token economy system (Travis & Sturmey, 2013).

During baseline sessions, the staff gave the participants instructions around the replacement behaviours that were to be used when the participants were presented with antecedent stimuli that provoked their aggressive behaviours (Travis & Sturmey, 2013). The staff provided participants with examples of statements to say when they were feeling provoked by the identified antecedent stimuli. For example, an antecedent for aggressive behaviour for one of the participants included delayed access to a preferred reinforcer. The authors described an appropriate alternative response to the participant when they were confronted with the antecedent stimuli. An example of an appropriate response when not being granted access to a preferred piece of food might have been “if I can’t have an orange because there are no more available, can I have a banana instead?” Participants were

instructed to use five different verbal statements following the presentation of five antecedent stimuli identified as aggression-provoking (Travis & Sturmey, 2013).

The intervention was implemented in a staggered sequence by one staff member in the presence of a researcher and two observers. The intervention session began with the staff member providing an anecdotal account of an antecedent stimulus that was identified as aggression-provoking and then describing the participant's usual response to the identified stimulus (e.g., "in the past you have responded by throwing the television remote at the television") and an alternative appropriate response that could be used instead of the aggressive response (e.g., "instead of throwing the remote, I would like you to talk with staff, explain you were upset about the event and arrange to carry out the task at a different time"). The staff member then encouraged the participant to repeat back to them the anecdotal account of the antecedent event and the appropriate alternative statement in response to the antecedent event. The staff member would provide praise if the participant repeated the story back to the staff member accurately or verbal feedback if the participant did not repeat the story accurately. The staff member would retell the story and continue to provide feedback until the participant was able to verbally retell the story back to the staff member. Once the participant was able to retell the story accurately, the staff member and the experimenter role-played the anecdote with the experimenter playing the role of the participant who provides the alternate appropriate response to the antecedent event. The role play was performed twice and then the participant had an opportunity to ask any questions. The staff member then performed the role play with the participant and the participant was encouraged to use the appropriate alternative response to the antecedent stimuli. The participant and staff member continued to rehearse the sequence until the participant was able to perform the correct response with 100 percent accuracy. The staff member continued to provide feedback for incorrect responses and praise for correct responses after each role play. Each of the five

antecedent stimuli were role-played until the participant was able to perform the target response correctly for three consecutive trials.

Following the acquisition of the appropriate alternative responses to five aggression-provoking antecedents, the five remaining aggression-provoking stimuli were presented to the participants by novel staff members in a residential or workplace setting to assess the generalisation of their new skills. The results showed that behavioural skills training took approximately 30, 45 and 150 minutes for each participant to learn to 100 percent accuracy, respectively. In addition, each participant displayed similar rates of aggressive behaviour (i.e., less than 20 percent of responses) and replacement responses (i.e., more than 70 percent of responses) to the novel antecedent stimuli following the intervention. Travis and Sturmey (2013) also reported that the number of community trips the participants had each month increased from one prior to the intervention to between two to six trips per month after the intervention. Staff working with the participants reported that the participants were more capable of controlling their anger following the behaviour skills training and this appeared to have a direct effect on their ability to participate in the community.

Other interventions carried out in school and classroom settings included those conducted with older children and adolescents, totalling 10 of the studies included in Table 2 (O'Reilly et al. (2012), Sansosti, 2012; Pennington et al., 2012; Bloom et al., 2013; Davis et al., 2012; Rozenblat et al., 2009; Devlin et al., 2011; Whitford et al., 2013; Sigafoos et al., 2008 & Soares et al., 2009). A common element of these studies is that the majority were able to produce good effects in a short period of time. In particular the studies conducted by O'Reilly et al. (2012); Pennington et al. (2012); Bloom et al. (2013); Davis et al. (2012) and Whitford et al. (2013) have shown significant reductions in problem behaviours after implementation of less than one week. The rapid reduction in problem behaviours may have occurred in these settings because participants were able to be taught new skills during mass

trials or blocks of sessions throughout the school or work day. In support of this idea, Umbreit and colleagues (2007) stated that teaching new skills requires powerful and frequent reinforcement. Mass trials or blocks of sessions may be an important method to consider in the acquisition of new skills by people who attend respite environments for brief periods of time because they may be restricted to specific periods of time they are present at the centre (e.g., morning and evening). Therefore, intervention sessions may need to be intense and involve powerful reinforcement during these brief set times at the respite centre in order to facilitate acquisition.

Interventions in the respite setting may need to show good effects rapidly in order to be successful. Thus, interventions that showed reductions in problem behaviour or increases in positive behaviour skills in fewer sessions are of particular interest. Some of the studies included in Table 2 have shown reductions in problem behaviours within one week of implementation of the intervention. These studies included Wrigley et al. (2010); O'Reilly et al. (2012); Pennington et al. (2012); Robertson et al. (2013); Bloom et al. (2013); Travis and Sturmey (2013); Davis et al. (2012); Echeverria and Miltenberger (2013); Whitford et al. (2013); and Lancioni et al. (2009). Studies that were successful and produced good outcomes in fewer sessions involved reinforcement of behaviour already in the participant's skill set (Wrigley et al., 2010; Pennington et al., 2012; Robertson et al., 2013; Bloom et al., 2013; Davis et al., 2012; Echeverria & Miltenberger, 2013; Whitford et al., 2013 & Lancioni et al., 2009). The types of approaches used to reinforce existing behaviour have included differential reinforcement of other behaviour (Wrigley et al., 2010), differential reinforcement of alternative behaviour (Pennington et al., 2012; Robertson et al., 2013; Bloom et al., 2013; Whitford et al., 2013) and a combination of differential reinforcement and extinction (Robertson et al., 2013; Bloom et al., 2013).

Some problem behaviours may be considered unsafe to the person or others to place on extinction (e.g., ignoring severe self-injury or aggression toward others). In such cases, the use of powerful reinforcers has been shown to reduce problem behaviour successfully without exacerbating risk of harm by placing problem behaviours on extinction (Davis et al., 2012; Robertson et al., 2013). Reinforcers could be considered powerful if the presence or absence of the reinforcers can manipulate behaviour. For example, in the study by Davis and colleagues (2012), four of the participants engaged in problem behaviours in response to an increase in academic task demands. The problem behaviours that occurred in response to an increase in task demand were able to be manipulated by allowing the participants to have a break from the academic task and access to a preferred task instead. A second example can be seen in the study by Robertson and colleagues (2013) who found that problem behaviours were elicited by each of the two participants in response to an increase in task demands and toy restriction, respectively. The problem behaviours that occurred in response to an increase in task demands or restriction of toys were able to be manipulated by including breaks from task demands and access to toys. Thus, breaks and toy access could be considered strong reinforcers in both studies (Davis et al., 2012; Robertson et al., 2013) because of their direct influence on the problem behaviour and a natural consequence of the function of the participant's problem behaviours.

The procedures involved in the study by Robertson, Wehby and King (2013) are worth highlighting because of the positive outcomes observed when differential reinforcement of alternative behaviour is employed without extinction of problem behaviour. The majority of problem behaviours elicited by individuals with multiple disabilities has included self-injury and aggression (Smith & Matson, 2010), both of which can be difficult to ignore because of the increased risk of harm to self or others. Thus, it may be important to

assess how interventions can successfully address problem behaviours without needing to place more aggressive and harmful behaviour on extinction.

The study by Robertson and colleagues (2013) included two participants. Nicholas was two years and 10 months old and exhibited aggressive and disruptive behaviour, including hitting, kicking or pulling the hair of his mother and younger brother. Jeff was five years and six months old. Jeff exhibited disruptive, destructive and aggressive behaviour, including knocking over furniture, banging his head on the table and hitting others. A functional analysis was conducted at home and included the following four conditions to identify potential motives for problem behaviours. The test conditions were tangible, demand, attention and play. Each condition was conducted over four or five sessions and each session lasted five minutes. In the tangible condition, the participants played with preferred toys for a short period of time. After the short play period, parents restricted the preferred toys from the participant and returned the toys contingent on the participant engaging in problem behaviour. In the demand condition, the parent asked the participant to pack away toys (Nicholas) or complete file folder work (Jeff). If the participant refused, the parent implemented a three step prompting sequence. The prompting sequence involved a verbal prompt, followed by the parent modelling the task, and then if the participant still refused, the parent would physically prompt the participant. If the participant engaged in problem behaviour, the parent would say “take a break” and the participant was free to perform self-directed tasks without prompts from the parent. In the attention condition, the parent read a magazine or talked with the researcher while the participant played with toys. When the participant engaged in problem behaviour, the parent provided attention in the form of reprimands and ignored any requests. In the play condition, the participant had access to several preferred toys, full parental attention and the condition was free from demands.

The functional analysis formed the basis for intervention (Robertson et al., 2013). The main aim of the intervention was to identify whether the participants would choose to engage in requesting behaviour (i.e., asking for the preferred item) or problem behaviours to make their demands known when both behaviours received the same level of reinforcement. Intervention sessions were conducted in the condition that produced the highest level of problem behaviour and replacement behaviours for each participant. The results from the functional analysis identified that Nicholas showed the highest rates of problem behaviour and spontaneous requests in the tangible condition. Jeff showed the highest rates of problem behaviour and spontaneous requests in the demand condition (i.e., file folder work). In the baseline sessions, parents were instructed to restrict toys (Nicholas) and give out task demands (Jeff) and only provide the participant with reinforcement when they engaged in problem behaviour. Reinforcement for Nicholas included giving Nicholas access to a preferred toy and for Jeff, escape from task demands. In the intervention sessions, the participants would receive reinforcement for engaging in the problem behaviour or using verbal requests to make their needs known. Throughout the intervention sessions, parents continued to restrict access to toys and provide task demands and provided reinforcement for both problem behaviour and target requests. Target requests were identified in the functional analysis and included the participant verbally stating what they wanted. For example, when Jeff did not want to complete the task he could say “no” (target request) or engage in the problem behaviour and either behaviour would allow him to escape the task. The research design for the intervention with Nicholas was an A-B-A-B withdrawal design with an additional four sessions of schedule thinning after the final intervention. Each stage contained three, four, one, and five sessions, respectively. The research design for the intervention with Jeff was an A-B-A-B-A-B withdrawal design, with each stage containing three, seven, four, four, six, three, and 12 sessions, respectively.

The results of the study showed that the number of times Nicholas engaged in problem behaviour had reduced from between two to eight times per session to between zero and three times per session, excluding the first session where problem behaviour occurred 12 times (Robertson et al., 2013). The first session of each intervention stage showed an increase in problem behaviour, three times for the first intervention sessions and 12 times in the second stage of intervention sessions and this level of problem behaviour reduced and levelled over time. Requests became more consistent throughout the intervention stages and reduced from six to 18 times at baseline to four to six times per session throughout the intervention. The results from the intervention study with Jeff showed that problem behaviour had reduced from eight to 27 times per session at baseline to zero to 12 times per session throughout the intervention, excluding the first session of the intervention where problem behaviour occurred 20 times. Requests ranged from zero to 16 at baseline and reduced to zero to 11 throughout the intervention, though had become more consistent. Overall the results showed that the rate of problem behaviour had decreased throughout the intervention and the rate of requests generally increased and stabilised. The authors concluded that this result may have occurred because requests were easier to perform for the participant and less tiring than problem behaviours to get what they wanted. Therefore, in cases where it is not possible to ignore problem behaviour (e.g., running onto the road), this study shows that introducing a replacement behaviour and reinforcing both behaviours (i.e., replacement and problem behaviour) may still result in a reduction in problem behaviour (Robertson et al., 2013).

One such study that showed rapid acquisition of new skills was Mechling, Gast and Fields (2008). Mechling and colleagues (2008) had not been included in Table 2 as the participants did not have any reported problem behaviours. However, the results of their study were worth highlighting because of their success in teaching positive behaviour skills to young adults with multiple disabilities in a short timeframe. Mechling and colleagues

(2008) taught cooking-related skills to three young adults with multiple disabilities using video prompting. Mechling et al. (2008) indicated that teaching adaptive skills may increase an individual's independence, opportunity for employment and social activities. The main aim of the study was to see whether the participants could learn to complete a step-by-step procedure using video prompting to show and instruct the cooking procedures.

Three participants aged 19-years to 22-years were taught three different cooking procedures using the video prompt (Mechling et al., 2008). The participants were taught how to operate the DVD player to pause, skip and repeat the different scenes or procedures on the video. The authors used graduated prompting to teach the participants how to use the DVD player to complete the cooking task. Participants could self-prompt (i.e., replay the scene of the component of the task they were attempting to complete); verbal prompt from the author (i.e., "press the replay button"); and verbal and gestural prompt from the author (i.e., "press the replay button" while pointing at the corresponding button on the remote). The participants were assessed on their ability to complete the cooking task (i.e., cook a grilled cheese sandwich) prior to the intervention. The intervention was implemented once per day, two-days per week and sessions generally lasted about 30-minutes. At the end of the intervention session, participants could eat the food they had prepared (Mechling et al., 2008).

The results showed that the participants were able to complete the cooking task completely after two to four sessions on average (Mechling et al., 2008). To test their ability to complete the cooking task, each participant was instructed to complete the cooking task without the video prompt. The results showed that the participants learned to complete the task with 90-99% accuracy without needing to rely on the video prompt within one to five sessions. The researchers concluded that video prompting could initially be used by individuals with multiple disabilities to teach themselves multi-step procedures that they could remember and later perform on their own without needing the video prompt. Although,

Mechling and colleagues (2008) had not reported any information regarding problem behaviours, they did show that the participants were able to learn new skills within four days. The strategies employed by Mechling et al. (2008) may be particularly relevant to the types of approaches that can be used effectively in short-stay respite settings to increase positive behaviour skills and reduce problem behaviours. Mechling and colleagues (2008) used self-direction and graduated prompting to teach skills and used natural consequences (i.e., eating the food they had prepared) to reinforce the new behaviours. Therefore, the findings from Mechling and colleagues (2008) may indicate that frequent exposure (e.g., mass trials or repetition of steps) facilitates acquisition and natural consequences serve as strong reinforcers in the acquisition of new skills.

Summary and Limitations

Twenty-four intervention studies were reviewed in the literature review. All of these involved strategies that aimed to reduce problem behaviours by people with intellectual and multiple disabilities. These studies have been summarised in Table 2 and the outcome and effects of each of the studies has been reported in Table 3, both shown at the end of this chapter (single-spacing and slightly reduced font size has been used to improve readability). One additional study that was not included in Table 2, showed strategies that increased positive behaviour skills with people with intellectual disabilities (Mechling et al., 2008).

In order to systematically analyse the effectiveness of the interventions in these 24 studies, effect sizes were calculated using percentage of non-overlapping data (PND) (Scruggs & Mastropieri, 1998). The PND is calculated by computing the percentage of 'phase B' data that exceeds the highest data point in 'phase A', if the intervention is increasing a behaviour. To calculate the PND when the intervention is reducing behaviour,

the percentage of data that is below or lower than the lowest data point in ‘phase A’ data will produce the effect size.

Table 1 *Quality of effect sizes derived from percent non-overlap data (Scruggs & Mastropieri, 1998).*

Effect Size	Quality of the Results
>70%	Effective
50-70%	Questionable Effectiveness
<50%	No Observed Effect

The PND can range from 0% to 100% and the quality of the effect size ranges from *no observed effect* (i.e., <50%) to *effective* (>70%), as shown in Table 1. The effect sizes of each of the studies reviewed in Table 3 had included one or more interventions that were above 70%. This indicated that the studies reviewed had one or more interventions that were ‘*effective*’ (Scruggs & Mastropieri, 1998).

The majority of the studies reviewed in Table 3 showed that the interventions were effective on the reduction of the target problem behaviours (Sigafoos, 2008; Davis et al., 2012; Rozenblat et al., 2009; Adkins et al., 2010; Wood et al., 2011; Devlin et al., 2011; Soares et al., 2009; Lancioni et al., 2009). Some of the studies showed questionable effects for some of the participants (Rozenblat et al., 2009; Wood et al., 2011); and one study showed no observable effect for one of the participants following the intervention (Devlin et al., 2011). The study by Chezian and colleagues (2014) showed questionable effects for two of the participants in accordance with PND (Scruggs & Mastropieri, 1998). However, the effects of the intervention showed a decreasing trend in the rate of problem behaviours and a

reduction in the level of problem behaviour when the participants had fully acquired the alternative communicative response for their behaviour.

The meta-analysis by Beavers et al. (2013) has shown that the use of functional analysis in the assessment of problem behaviour has been increasing. Seven out of the nine intervention studies summarised in Table 2 below had each included a functional analysis or functional assessment to assist with planning prior to intervention (Lancioni et al., 2013; McClean et al., 2007; McClean & Gray, 2012; O'Reilly et al., 2012; Sansosti, 2012; Stokes & Luiselli, 2009; Wrigley et al., 2010; Pennington et al., 2012; Bloom et al., 2013; Travis & Sturmey, 2013; Davis et al., 2012; Wood et al., 2011; Devlin et al., 2011; Whitford et al., 2013). The studies that did not use functional analysis or functional assessment (Mechling et al., 2008; Singh et al., 2008; Lancioni et al., 2009; Echeverria & Miltenberger, 2013; Adkins et al., 2010; Rozenblat et al., 2009; Sigafoos et al., 2008; Soares et al., 2009; Ingersoll et al., 2013) were studies that either: 1) did not target problem behaviours (Mechling et al., 2008), 2) the study's main focus was on the outcome of a specific intervention rather than reducing problem behaviour (Singh et al., 2008; Ingersoll et al., 2013; Adkins et al., 2010), 3) the function of the problem behaviour was apparent (Echeverria & Miltenberger, 2013; Sigafoos et al., 2008), or 4) problem behaviours were altered by employing basic reinforcement of other behaviour strategies (Rozenblat et al., 2009; Soares et al., 2009; Lancioni et al., 2009).

The study by Stokes and Luiselli (2009) indicates that for more serious challenging behaviour the difficulty of obtaining a functional analysis of target behaviour can be avoided by using a functional analysis of similar behaviour, without needing to provoke the target behaviour (Stokes & Luiselli, 2009). Campbell et al. (2014) explained that studies that carried out functional analyses had the most effective interventions for problem behaviour. The majority of studies showing good effects reviewed in Table 3 had also used the information from a functional analysis or assessment to supplement the type of intervention chosen for

each participant. Therefore, functional analysis or assessment may be an important component for successful treatment outcomes in the selection of interventions for people with multiple disabilities.

Much of the research on challenging behaviour has been conducted in clinical settings and there is a need to identify whether these interventions can be generalised to community settings (Campbell et al., 2014). Of the 25 intervention studies reviewed, five studies were conducted at day placement (Lancioni et al., 2013; Stokes & Luiselli, 2009; Lancioni et al., 2009; McClean & Gray, 2012; Chezan et al., 2014), one study was conducted at the parental home (Singh et al., 2008), 10 studies were conducted at school (O'Reilly et al., 2012; Sansosti, 2012; Pennington et al., 2012; Bloom et al., 2013; Davis et al., 2012; Rozenblat et al., 2009; Devlin et al., 2011; Whitford et al., 2013; Sigafoos et al., 2008; Soares et al., 2009), one study in a preschool setting (Wood et al., 2011), one study in an apartment/respite-type setting (Mechling et al., 2008) and two studies were conducted both at the group home and at day placement services (McClean et al., 2007; Wrigley et al., 2010). Beavers et al. (2013) do not mention of the use of functional analysis in respite care settings, only that nine of the studies reviewed in Beavers et al., (2013) were conducted at vocational programmes and one study in the community.

The lack of training of respite staff has generally come into question by families (Chan et al., 2012) thus it is important that interventions can be implemented by people who do not have therapist qualifications. Nine intervention studies were implemented by teachers (Bloom et al., 2013; Davis et al., 2012; Rozenblat et al., 2009; Wood et al., 2011; Devlin et al., 2011; Whitford et al., 2013; Soares et al., 2009; Pennington et al., 2012; Sansosti, 2012); seven of the studies were implemented by residential or day placement staff (Ingersoll et al., 2013; Travis & Sturmey, 2013; Echeverria & Miltenberger, 2013; Wrigley et al., 2010; McClean & Gray, 2012; Stokes & Luiselli, 2009; McClean et al., 2007); two interventions

were implemented by parents (Robertson et al., 2013; Singh et al., 2008) and seven studies were author or therapist-led (Lancioni et al., 2013; Mechling et al., 2008; O'Reilly et al., 2012; Chezan et al., 2014; Adkins et al., 2010; Sigafos et al., 2008; Lancioni et al., 2009).

Three of the studies reviewed in Table 2 had been implemented across settings (i.e., day placement and home or classrooms) (McClean et al., 2007; Wrigley et al., 2010; Whitford et al., 2013) and one study had collected data on the effect of the intervention across settings or with other people (Travis & Sturmey, 2013). An overarching weakness of the studies reviewed in Table 2 is that any transference effects of an intervention are not known. In particular, few studies were implemented across different settings (e.g., work and home), nor were any data collected on the effect of the intervention in other settings. Therefore, it is not known whether the skills taught to reduce problem behaviours in one setting (e.g., respite care facility) could be transferred to another setting (e.g., home). In addition, the lack of data on the effectiveness of the intervention in other settings limits the ability to predict whether the interventions would have had the same treatment effects if it was applied in different settings (e.g., in a respite care facility). Based on the four studies that collected data in multiple settings (McClean et al., 2007; Wrigley et al., 2010; Whitford et al., 2013; Travis & Sturmey, 2013), the interventions each had good effect sizes and the study reported positive outcomes for the participants in other settings as a result of the intervention (i.e., more community outings, Travis & Sturmey, 2013). Therefore it is possible that functional skills learned in one setting may transfer and positively affect an individual across other settings.

The 24 studies reviewed in Table 2 and Mechling et al., (2008) were all single-case studies. In addition, the studies identified by Kurtz et al. (2011) were also all single-case studies. The heterogeneity of the participants identified in the meta-analysis by Kurtz et al. (2011) has shown that FCT can be efficacious across a variety of problem behaviours each with varying functions, and “efficacious” with a variety of people with various and multiple

disabilities (Kurtz et al., 2011, p.2940). The limited number of randomised control trials with people with disabilities and problem behaviour reflects the difficulty of recruiting a heterogeneous sample and the obvious ethical issues that accompany working with people with challenging behaviour, particularly, the possibility that a person with challenging behaviours could harm themselves or others (Campbell et al., 2014). Therefore, many of the outcomes of each of the interventions could be attributed to the individual's personality or traits. However, for the studies reviewed in Table 2 that were conducted with multiple participants (Lancioni et al., 2013; McClean et al., 2007; McClean & Gray, 2012; O'Reilly et al., 2012; Ingersoll et al., 2013; Travis & Sturmey, 2013; Robertson et al., 2013; Adkins et al., 2010; Davis et al., 2012; Bloom et al., 2013; Echeverria & Miltenberger, 2013; Rozenblat et al., 2009; Wood et al., 2011; Devlin et al., 2011; Lancioni et al., 2009; Chezan et al., 2014), the good effects observed as a result of the intervention may show that the underlying principles adopted within each intervention (e.g., differential reinforcement, functional communication training) can be effective across a heterogeneous population.

There has been limited mention of interventions in respite-type settings in the meta-analysis by Beavers et al. (2013) and Kurtz et al. (2011). In the review of individual intervention studies, there were three intervention articles that came close to emulating a respite setting (McClean & Gray, 2012; Mechling et al., 2008; Wood et al., 2011) and six intervention articles that were implemented in day placement vocational centres with adults (Chezan et al., 2014; Wrigley et al., 2010; McClean et al., 2007; Stokes & Luiselli, 2009; Lancioni et al., 2009; Lancioni et al., 2013). Problem behaviour was reduced to desired levels on an average of 11 weeks after intervention (McClean & Gray, 2012), in 2-4 sessions of the intervention (Mechling et al., 2008) and on-task behaviour in the study by Wood and colleagues (2011) varied, though showed an increase in the trend and level after one session for one participant and after about five sessions for the other two participants. For the studies

conducted in day placement centres, problem behaviour was reduced to desired levels in 120 and 30 sessions (two to six sessions per day) (Lancioni et al., 2013), in five months (McClean et al., 2007), in 20 sessions (three sessions per day, Wrigley et al., 2010), 15 weeks (Stokes & Luiselli, 2009), 109 and 160 sessions (five to 14 sessions per day, Lancioni et al., 2009), 320, 232 and 144 trials (eight trials per day, Chezan et al., 2014). In general, the majority of the studies reviewed in Table 2 that were implemented in day placement settings required a higher number of sessions than interventions conducted in other settings (Travis & Sturmey, 2013).

The intervention with the shortest duration of sessions and the fastest acquisition rates was Travis and Sturmey (2013). The positive skills were successfully taught within 30, 45 and 150 minutes for each of the three participants (Travis & Sturmey, 2013). In comparison, the study with the highest number of sessions exceeded 3-years (Singh et al., 2008). Campbell et al. (2014) explains the idea that it is possible that the rate of therapeutic change is going to be slower for people with intellectual disabilities than for people in the general population and thus intervention sessions are more likely to be delivered at a higher intensity or require a higher number of sessions to achieve the same rate of therapeutic change as in the general population (Campbell et al., 2014). One intervention study showed that replacement behaviours could be taught to individuals with multiple disabilities in a setting similar to a respite environment (i.e., two-sessions per week) (Mechling et al., 2008). However, this intervention did not involve people with problem behaviour, nor did the intervention try to reduce a specific behaviour. Though, the study does indicate the possibility that people with disabilities can be taught replacement behaviours in a short period of time.

The types of intervention techniques that were used in each study included differential reinforcement of other behaviour (McClean et al., 2007; Wrigley et al., 2010; Pennington et al., 2012; Rozenblat et al., 2009), differential reinforcement of alternative behaviour and

extinction (Bloom et al., 2013), positive reinforcement (Lancioni et al., 2013; McClean & Gray, 2012; O'Reilly et al., 2012; Stokes & Luiselli, 2009; Whitford et al., 2013; Soares et al., 2009; Lancioni et al., 2009), functional communication training (McClean et al., 2007; O'Reilly et al., 2012; Stokes & Luiselli, 2009; Robertson et al., 2013; Davis et al., 2012; Sigafoos et al., 2008; Chezan et al., 2014), specific skills training (Ingersoll et al., 2013; Echeverria & Miltenberger, 2013; Devlin et al., 2011) and teaching replacement behaviours (Lancioni et al., 2013; Mechling et al., 2008; Sansosti, 2012; Singh et al., 2008; Travis & Sturmey, 2013; Adkins et al., 2010; Wood et al., 2011). In each intervention with functional communication training, an additional treatment component was used. For two studies the additional treatment component was positive reinforcement (McClean & Gray, 2012; Stokes & Luiselli, 2009; Chezan et al., 2014; Sigafoos et al., 2008; Robertson et al., 2013; Davis et al., 2012), for one study the additional treatment component was differential reinforcement of other behaviour and differential reinforcement of low rates (McClean et al., 2007). A major limitation with the types of interventions used is the lack of data on the replacement behaviours. Multiple studies had used differential reinforcement of other behaviours or taught replacement behaviours, however the replacement behaviours were not reported, only that the incidence of problem behaviours had reduced. It is important to measure the efficacy of the intervention to teach replacement behaviours and also whether the individual has learned positive behaviours or skills as a result of the intervention.

It is unknown whether teaching new skills and reinforcing existing behaviour would be as successful in reducing problem behaviour in a respite setting where the intervention would be implemented at a maximum of three days per week (McClean et al., 2007). Thus, because of the short-duration of stays in the respite setting, reinforcing behaviour that is already in the participant's behavioural repertoire may be more successful than teaching new skills. This is because the acquisition of new skills may require more powerful and frequent

reinforcement (Umbreit et al., 2007) and in a respite setting there may not be enough time available to reinforce new skills to the extent that they will likely be maintained long-term. However, there appeared to be a trend between the use of natural consequences or reinforcement when teaching or reinforcing existing behaviours and rapid acquisition of replacement behaviours (Davis et al., 2012; Mechling et al., 2008; Robertson et al., 2013). Thus, natural consequences of newly reinforced behaviour may be considered more powerful. Therefore, interventions with the use of natural consequences to reinforce behaviour that is already in the participant's behavioural skill set may be more effective than teaching new skills to reduce problem behaviour.

Research Question

This review has shown that functional behaviour assessment and analysis are common approaches to understanding problem behaviours in individuals with disabilities. It has also shown that functional communication training, teaching replacement behaviours and differential reinforcement of positive behaviour and other behaviour have been effective strategies for reducing problem behaviour. However, these strategies have never been implemented in respite care settings.

One of the limitations of the strategies is that the limited periods of time the participant attends respite care and the training of the staff might affect the possibility of teaching replacement behaviours. However, Mechling et al. (2008) has shown that adaptive behaviours can be taught in a short period of time and that the nature of staff may be less important when the intervention is self-determined. In the study by Mechling et al. (2008) three young adults with multiple disabilities were successfully able to cook three different meals following two to four sessions of self-determined video prompting.

While there is an emphasis on self-determination in the literature, this has not been part of the reported processes of reducing problem behaviour. It is important that the intervention process fully involves the participant and that the participant decides what type of intervention they would like to receive. Therefore, in the proposed study, the participant will participate in designing positive behaviour support plans. Depending on the nature of the plan, participants will act as autonomous agents throughout the intervention process.

Positive behaviours will be studied and reported. It is important to identify other behaviours that the individual engages in that are positive. The reason for this is to help the individual to build on the positive behaviour skills the individual already possesses and potentially use this positive behaviour as a replacement for the target problem behaviour. By using positive behaviour as a replacement for problem behaviour, the individual learns appropriate behaviour that will help them toward achieving self-regulation and independence. For example, replacing an inappropriate behaviour (e.g., shouting out) with an appropriate behaviour (e.g., raising hand) will still allow the individual to get what they want, though, with less effort and distress. The types of problem behaviours observed will extend from destruction of property to self-injury (e.g., hitting, punching, scratching, biting self). Target behaviour will be observed across four different settings within the respite environment. The times/settings are as follows, during self-care, free-time, transportation, and meal times. Informed consent will be sought by the legal caregiver of the participant and from the managers and staff at the respite centre.

The current study aims to identify whether functional behaviour assessment and behavioural case formulation, followed by devising and implementing a positive behaviour support plan will reduce the frequency of problem behaviours that occur in an individual with multiple disabilities attending a respite care facility and improve behavioural autonomy, self-

regulation and/or self-realisation. The purpose of the research, with respect to client problem behaviour, will involve:

- 1) Demonstrating the use of a brief functional behavioural assessment;
- 2) Using the functional assessment to design a self-determined positive behaviour support plan;
- 3) Examining the effect of implementing the plan on identified problem behaviours.

Table 2 *Summary of published interventions for the reduction of problem behaviour in 54 individuals with multiple disabilities from single-subject designs.*
Studies that included functional analysis or assessment are marked with an asterisk (*)

	Citation	Study Design	Participant	Problem Behaviour & Setting	Intervention	Intensity
1	Lancioni et al. (2013)	ABB ¹ AB ¹	Male 19-years old profound ID; hemiplegia.	Hand mouthing <i>Day placement</i>	Picture of a square on computer screen acted as microswitch. B phase: touching the red square activated preferred stimulation for 10s. Hand-mouthing had no bearings on stimulation. B ¹ phases: 10s stimulation occurred after touching red square. Hand-mouthing terminated the stimulation. Responding to the square restarted the stimulation period.	B : 61 sessions B ¹ : 97 sessions B ¹ :178 sessions 30 min/ session/once per day
2			Female 20-years old Severe ID; non-ambulatory; visual impair	Drooling and hand mouthing <i>Day placement</i>	Use of microswitch in a napkin to play music with appropriate behaviour (wiping saliva) and terminate music when hand mouthing occurred. Intervention B phase: wiping response lead to 20s music stimulation, hand mouthing had no bearing on music stimulation. Intervention B ¹ phases: music stimulation would be interrupted if S hand-mouthed. Music stimulation continued as soon as hand-mouthing stopped.	B : 19-sessions B ¹ : 18-sessions B ¹ : 75-sessions 30 min/ session/once per day
3	Stokes & Luiselli (2009) *	AB	Male 26-year old Prader-Willi syndrome	Rectal picking <i>Day Placement</i>	FBA : functional behavioural assessment showed the behaviour garnered attention from adults, allowed him to escape non-preferred situations, and provided sensory reinforcement. Intervention: Time-limited bathroom visits: each visit to the bathroom limited to 5-mins. Functional communication training: if 5-mins wasn't long enough, participant was taught to say 'I need one more minute'. Differential positive reinforcement: social, tangible, activity reinforcers when participant did not engage in the problem behaviour.	10-weeks intervention
4	Wrigley et al. (2010)*	ABABA	Female Adult Severe developmental disabilities; blind. (age not disclosed).	Rumination History of SIB, aggression, property destruction, rumination. <i>Mainly Group home</i>	Functional analysis in 3 conditions attention, alone, demand Baseline: no contingencies for rumination. Multi-component intervention: (a) the vocal and physical interruption of a precursor response (i.e., the experimenter said "stop" and gently placed a hand on S's shoulder. (b) 10-min 'walk and work' periods. (c) 10-min 'free attention' periods in which participant was seated if she desired and activities were freely available while a variable time (VT) 5-s schedule of attention. (d) Resetting DRO phase in which participant could earn preferred edible items contingent on the absence of rumination during 1-min intervals.	Three 120-min sessions per day, immediately following a meal. Sessions were conducted 3:7 days per week, Conducted by staff.

	Citation	Study Design	Participant	Problem Behaviour & Setting	Intervention	Intensity
5	McClean, Grey, McCracken (2007)*	Multiple baseline across subjects A B	Female 21-years old, mild ID, cerebral palsy.	Biting, punching, kicking. <i>Group Home & Day Placement</i>	Intervention Approach: Direct observation of target behaviour; Quality of Life Questionnaire; Functional assessment; Multi-element behaviour support plans from LaVigna and Willis (2005). Proactive strategies - produce changes over time and reactive strategies : manage the behaviour when it occurs: Communicative function: Escape and attention Skills: say “I want/don’t want”. Intervention: Direct reinforcement of other behaviour Reactive strategy: physical withdrawal or non-contingent attention for 30-mins. Reinforcement every 2 days participant did not engage in aggressive behaviour.	Intervention 20-months. Rate of implementation of support plan- 95%
6			Male 22-years old severe ID, autism.	Punching, kicking, slapping. <i>Group & Foster Homes</i>	Communicative function: Escape. Skills: say “too noisy”. I: Differential reinforcement of low rates. Reactive strategy: active listening and redirection.	Intervention 22-months. Rate of implementation of support plan - 74%
7			Male 24-years old, Severe ID, autism.	Self-injury: head banging. <i>Group home.</i>	Communicative function: Attention. Skills: say “stay” or phone home. Intervention: momentary direct reinforcement of other behaviour. Reactive strategy: Redirection; Offered head massages every 15-mins and frequent opportunities to talk to mother.	Intervention 22-months. Rate of implementation of support plan - 48%

	Citation	Study Design	Participant	Problem Behaviour & Setting	Intervention	Intensity
8	McClean & Grey (2012)*	Multiple baseline across subjects AB ¹ B ² B ³ B ⁴ B ⁵	Male 21 years old. Severe ID, autism, Down syndrome	Punching others; Self-Injury (head banging) <i>Residential and Day Placements</i>	Functional Behavioural Assessment: questionnaire completed by key support workers. Phase I hypothesised that behaviours were escape motivated. Intervention phases B1: Low arousal interaction style between staff and participant. Free access to preferred activities. Reduced noise in environment. B2: Rapport building; imitation of participants movements, phrases; following participant. B3: Predictability: 15 minute activity schedule; picture sequencing; weekly picture activity sequencing. B4: Functionally equivalent skills training: reinforcing use of 'red card' with withdrawal from activity. B5: Differential reinforcement (differential reinforcement for participation in an activity DRA, low rates of behaviour DRL and other behaviour DRO).	Intervention Phase B.1 - 4 weeks B.2 : 5 weeks B.3 : 3 weeks B.4 : 2 weeks B.5 : 139 weeks
9			Male 15 years old Severe ID, autism, ADHD	Aggression -scratching Self-Injury -hand biting	Functionally equivalent skills training : reinforcing gesture for "no" with withdrawal of demand.	B.1 : 3 weeks B.2 : 4 weeks B.3 : 4 weeks B.4 : 6 weeks B.5 : 134 weeks
10			Male 23 years old Severe ID, autism	Aggression -punching	As above. Functionally equivalent skills training : reinforcing verbal phrase "too noisy" with a reduction in level of noise in environment and "no" with demand withdrawal.	B.1 : 6 weeks B.2 - 4 weeks B.3 : 6 weeks B.4 - 5 weeks B.5 : 128 weeks
11			Male 17 years old Severe ID, autism, bipolar disorder	Aggression -hitting Self-Injury -hand biting	As above. Functionally equivalent skills training : reinforcing head shake for "no".	B.1 : 3 weeks B.2 : 9 weeks B.3- 4 weeks B.4 : 5 weeks B.5 : 115 weeks

	Citation	Study Design	Participant	Problem Behaviour & Setting	Intervention	Intensity
12	O'Reilly et al. (2012)*	ABAB	Male 5 years old Autism	Elopement, yelling, flopping onto the ground <i>School Classroom</i>	Antecedent communication intervention: Therapist would hold an object preferred by the participant and state a verbal mand (i.e., 'Can I have little computer?'). When the participant repeated the phrase, the participant was given the preferred item for 30 seconds. When 30 seconds had passed the therapist took the item away and repeated the phrase while simultaneously offering the item to the participant. When the participant repeated the phrase they were allowed to play with the object for 30 seconds.	Communication sessions lasted 10 minutes and 30 seconds Functional analysis : tangible condition lasted 10 minutes
13			Male 9 years old Autism	Biting others & self; slapping head	As above with participant taught to say "Doodle?" in order to gain access to the Doodle. (Functional analysis : tangible condition lasted 10 minutes)	intervention = 15 minutes; 10 minutes for FA,
14			Male 5 years old Autism	Elopement, yelling: flopping onto the floor	As above with participant taught to say "can I have iPad?" in order to gain access to the iPad.	Sessions = 10 minutes Functional analysis : tangible condition lasted 10 minutes
15	Sansosti (2012)*	AB	Male 12 years old Aspergers syndrome & ADHD	hitting, throwing objects, kicking, yelling <i>School Classroom</i>	Functional behaviour assessment with participant, family members and school teacher using semi-structured interview (O'Neill et al., 1997). & observation. This identified functions as: escape task demands and gain attention from teachers. The intervention involved: Direct Skills Teaching (i.e., recognizing, quantifying and expressing different levels of emotion) with Visual supports (i.e., cue cards to represent emotions) and Reinforcement (i.e., token economy)	six weeks during classroom hours.

	Citation	Study Design	Participant	Problem Behaviour & Setting	Intervention	Intensity
16	Singh et al. (2008)	ABCD	Male 17-year old Prader-Willi Syndrome and mild ID	Food-seeking, temper tantrums, skin-picking <i>Home</i>	Baseline: A: traditional family procedures with regard to eating and diet. Intervention: B: Exercise 30-minutes walking at moderate pace before breakfast. C: Exercise + food awareness programme. D: Exercise, food awareness programme + mindfulness training. (Included "Meditation on the soles of the feet"). Mother was primary therapist with assistance from researcher over email.	Baseline: 2 months. B: 12-months. C: 12-months. D: 24-months.
17	Pennington, Strange, Stenhoff, Delano & Ferguson (2012) *	ABA	Male 7-years old Autism	Eloping. Wandering away. <i>School Classroom</i>	Baseline observation: Intervention: a) Teacher prompts participant to sit on the carpet. b) If participant sat on carpet within five seconds the teacher would praise the participant. c) If the participant did not sit on the carpet, problem behaviour was recorded as occurring. d) As participant sat on carpet, teacher would give praise to the participant for any appropriate behaviour every 40 seconds. e) If problem behaviour occurred during this time, the problem behaviour was ignored. f) After the problem behaviour had ceased for five seconds, the teacher would begin to praise the participant for good behaviour every 40 seconds.	Sessions 6-9 minutes. There were four intervention sessions.
18	Ingersoll, Walton, Carlsen & Hamlin (2013)	Multiple baseline across subjects ABC	Male 15-years old Autism & ID	Mouthing objects Leg tapping <i>Residential Home</i>	Reciprocal Imitation Training (RIT) The teacher and participant sat on the floor or at the table. Preferred toys were available in front of the participant for them to engage in free play. a) Teacher imitates the student's actions and redirected any problem behaviours. b) The teacher provides running commentary of the student's actions using simple and repetitive words. c) Once in every minute the teacher would initiate an action for the student to imitate while giving it a verbal label (e.g. swim: with swimming action) d) The teacher repeated the action and verbal label up to three times. e) If the student did not imitate the action by the third time, the teacher could physically aid the student to complete the action. f) After the student completed the action (spontaneously or with physical aid) the teacher praised the individual. g) The teacher then continued to imitate the student's actions with verbal labels.	Sessions lasted 20 minutes and occurred 2-6 times per week for 10 weeks.
19			Female 13-years old Autism & ID	Mouthing, throwing objects		Sessions 20 minutes, 2-6 times per week for 10 weeks.

	Citation	Study Design	Participant	Problem Behaviour & Setting	Intervention	Intensity
20	Travis & Sturme (2013)*	Multiple baseline across subjects AB	Male 46-years old ID	Slapping, kicking, threatening "I'll cut your throat". <i>Residential</i>	Scenario: Staff verbally instructed the participant to imagine that they are about to go to the movies when their flatmate has a behaviour problem meaning that they cannot go to the movies because the staff are busy. Staff instruct the participant to calmly find a staff member, explains to the staff that they are angry that the trip was cancelled and asks staff when the trip will be rescheduled. Then the participant is to ask if he can do an activity that he enjoys doing. Teaching replacement behaviour: (the replacement behaviours are chosen based on the proposed function of the participant's aggression) 1.) Staff ask the participant to repeat back to them the triggering event from the scenario and the steps he should take in response to the triggering event, rather than aggressive responses. 2) If the participant correctly repeats the information back to the staff member, the staff will then proceed with the next step. 3) If the participant does not repeat the information correctly, the staff will reread the scenario and the steps to the participant and he will be asked to repeat it back until he repeats it correctly. 4) The staff role-play a different scenario with the participant. 5) Staff ask the participant to play the role of the person that started the trigger and the staff models the response. 6) repeat. 7) Staff ask the participant if they have any questions. 8) Same scenario, but staff initiate the trigger and the participant must attempt to complete the replacement behaviour steps. 9) During the rehearsal of the responses, staff will give praise for correct responses and provide guidance for incorrect responses. 10) When the participant's responses were 100% correct on each of the five steps, three times consecutively, the training ceased.	3 trials of the modelling phase. 30-minutes in one day.
21			Male 32-years old ID	slapping, kicking		Role modelling = 5 trials. 45 minutes.
22			Male 39-years old ID	Verbal threats of harm		Role modelling = 22 trials. (150 minutes).

	Citation	Study Design	Participant	Problem Behaviour & Setting	Intervention	Intensity
23	Robertson, Wehby & King (2013)*	ABAB	Male 2 years 10 months Autism	throwing objects, screaming, hitting. <i>Home</i>	Parents implemented the intervention under instruction of the researcher. Intervention sessions were conducted in the functional analysis treatment condition associated with the highest levels of problem behaviour. <i>Tangible condition:</i> 1) Mother would restrict toys from participant for 60 seconds. 2) Participant could either engage in problem behaviour or verbally request toys to regain possession. 3) If the participant verbally requested the toys, Mother would give toys to participant. 5) If the participant did not verbally ask for the toys or engage in problem behaviour, the toys were given to the participant after 60 seconds.	5 minutes/ sessions 0-4 times per week over 10 weeks.
24		ABABAB	Male 5 year 6 month old Autism	Disruptive & destructive behaviour, aggressive and self-injurious behaviour <i>Home</i>	<i>Escape condition.</i> 1) Mother would place demands on participant for five minutes (i.e., file work). 2) Participant could either engage in problem behaviour or verbally request a break from demand (i.e., say “no”). 3) When the participant verbally requested a break or engaged in problem behaviour. 4) Mother would close and remove file folder work and participant could engage in self-directed activity.	Sessions lasted 5 minutes each. Sessions occurred 1-4 times per week over 14 weeks.

	Citation	Study Design	Participant	Problem Behaviour & Setting	Intervention	Intensity
25	Adkins et al. (2010)	Multiple baseline across subjects ABC	Male 42 years old Mild ID	yelling, threatening <i>Residential & Vocational</i>	<i>Meditation on the Soles of the Feet</i> Training Steps: 1. If you are standing, stand in a natural rather than an aggressive posture, with the soles of your feet flat on the floor; If you are sitting, sit comfortably with the soles of your feet flat on the floor 2. Breathe naturally, and do nothing. 3. Cast your mind back to an incident that made you very angry. Stay with the anger. 4. You are feeling angry, and angry thoughts are flowing through your mind. Let them flow naturally, without restriction. Stay with the anger. Your body may show signs of anger (e.g., rapid breathing) 5. Now, shift all your attention to the soles of your feet. 6. Slowly, move your toes, feel your shoes covering your feet, feel the texture of your socks or hose, the curve of your arch, and the heels of your feet against the back of your shoes. If you do not have shoes on, feel the floor or carpet with the soles of your feet. 7. Keep breathing naturally and focus on the soles of your feet until you feel calm. 8. Practice this mindfulness exercise until you can use it wherever you are and whenever an incident occurs that may lead to you being verbally or physically aggressive. 9. Remember that once you are calm, you can walk away from the incident or situation with a smile on your face because you controlled your anger. Alternatively, if you need to, you can respond to the incident or situation with a calm and clear mind without verbal threats or physical aggression	The therapist trained the participant 1 hour per day, 5 days per week for 2 weeks. Participants were encouraged to practice the meditation at least two times per day without the therapist and with help from caregivers or staff as required.
26			Male 25 years old Mild ID	Disrupting peers at work and Whining		The therapist trained the participants 1 hour per day, 5 days per week for 4 weeks.
27			Female 22 years old Mild ID	aggression, property destruction,		The therapist trained the participant 1 hour per day, 5 days per week, for 5 weeks.

	Citation	Study Design	Participant	Problem Behaviour & Setting	Intervention	Intensity
28	Davis et al. (2012)*	ABCAC	Male 17 years old Autism Moderate ID	Screaming, hitting others, throwing objects, yelling <i>School</i>	Pre-training. 1) When problem behaviour occurred, the participant was allowed to escape the task for 30 seconds. 2) Participants were given a 'break card' which could be handed to the teacher for a 30 seconds break to engage in preferred activities (e.g., playing with a puzzle). 3) The teacher instructed the participant "begin your work". 4) If the participant did not respond within 5 seconds, the teacher would physically prompt the participant to use the break card. 5) When the participant was able to use the break card five times consecutively and independently of the physical prompts, the Functional Communication Training began. 6) When the participant handed the card to the teacher they were able to escape the task for 30 seconds engaging in preferred activity. 7) If inappropriate behaviour occurred, the task demands were taken away from the student for 30 seconds. The student was not allowed to engage in the preferred activity. 8) After each 30 second break, the participant's work was returned to their desk. 9) During the thinning of reinforcement phase, the interval of time between the participant placing the card in the teachers hand and their access to the preferred activity slowly increased.	Sessions lasted 10-15 minutes and occurred during the school day at the times when teachers were giving out instructions.
29			Male 12 years old Autism Severe ID	Running away, throwing objects refusing to move		
30			Female 8 year old Moderate ID Cerebral Palsy	Hitting others faces with closed fist		
31			Male 18 years old Mild ID	Leaving, physical aggression		

	Citation	Study Design	Participant	Problem Behaviour & Setting	Intervention	Intensity
32	Bloom et al. (2013)*	Multiple baseline across subjects AB	Male 5 years old ID Developmental delay	Aggression and property destruction <i>School Classroom</i>	Differential reinforcement of alternative behaviour and extinction. 1) At baseline, when problem behaviour occurred, the participant would be entitled to 30 seconds with a functional reinforcer (e.g., toys, escape from tasks). 2) During the intervention, the functional reinforcer was placed on extinction and instead the functional reinforce was only produced when the participant engaged in the alternative response. 3) When problem behaviour occurred, the alternative response was performed hand over hand in order to gain access to the functional reinforcer (e.g. toys or escape from tasks). 4) When problem behaviour occurred during each session the prompt from the teacher for the alternative response was delayed an additional 5 seconds. 5) If the participant performed the alternative response they were entitled to 30 seconds with the functional reinforcer. 6) The teacher would continue to provide hand-over-hand instruction for the alternative response until the participant could perform the alternative response without prompt.	Sessions each lasted 5 minutes. Several sessions could occur in one school day. Sessions were split amongst the classroom activities.
33			Male 4 years old Autism ID	Aggression and tantrums <i>School Classroom</i>	Alternative response : picture card exchange system. Printed words with pictures for “break” and “toys”. Problem behaviour was placed on extinction and alternative responses were taught using hand-over-hand physical prompt and increasing prompt delays (i.e., 5 second increase each session), the longest prompt delay lasting 30 seconds.	
34			Male 4 years old Autism ID	Mouthing <i>School Classroom</i>	Non-contingent reinforcement. NCR was used to compete with the participant’s mouthing behaviour. Baseline: 1) A bottle of hand sanitizer filled with water was available throughout the session for problem behaviour to occur. 2) No consequences were available for mouthing behaviour. Intervention: 3) A bottle of vitamin water was available non-contingently throughout the session.	

	Citation	Study Design	Participant	Problem Behaviour & Setting	Intervention	Intensity
35	Echeverria & Miltenberger (2013)	ABCBDDB	Male 51 years old Moderate ID	Rapid food consumption – choking <i>Residential</i>	1) The staff put a MotivAider/pager on the dining table. 2) Participants were instructed that they could only take a bite when the pager vibrated. 3) When the pager vibrated, the staff and the participant simulated taking a bite. 4) The staff presented praise when the participant completed the task correctly. 5) When the participant was able to perform the task three times consecutively and independently the staff placed an empty dinner plate and fork in front of the participant. 6) The participant was instructed to wear the pager and continue to simulate taking a bite, this time using the fork. 7) When the participant correctly performed the task three times consecutively, the staff placed a plate of food in front of the participant. 8) Once the participant took three consecutive bites of food on vibration of the pager the intervention training was complete. 9) If the participant attempted to take a bite before the pager vibrated, the staff could verbally prompt the participant to wait (e.g. “wait for the pager”). 10) The pager emitted a vibration signal once every 15 seconds. 11) The staff would provide verbal praise each time the participant waited for the vibration. 12) In the final phase, the pager was turned off and the staff sat with the participant while they had a plate of food in front of them. 13) The staff instructed the participant to chew their food thoroughly and to only take a bite when they had completely finished their previous mouthful. 14) Staff provided the participant with praise each time the participant waited until they had finished their mouthful before taking another bite.	Pager and verbal prompt sessions - 23 sessions. Pager sessions : 6 sessions. P & VP : 8 sessions VP : 10 sessions P & VP : 5 sessions.
36		ABCBC	Male 32 years old Moderate ID	Rapid food and drink consumption - choking		Pager (P) & Verbal Prompt (VP) : 6 sessions; P : 11 sessions; P & VP : 4 sessions; P : 24 sessions

	Citation	Study Design	Participant	Problem Behaviour & Setting	Intervention	Intensity
37	Rozenblat et al. (2009)	ABCBCB reversal design	Male 9 years old Autism	Stereotypic vocalisations <i>School</i>	1) At the beginning of each session, the teacher reviewed the available reinforcers with the participants. 2) The participant would choose the item that they preferred the most. This item would be the DRO reinforcer for the session. 3) When stereotypic vocalisations occurred, the teacher began event recording and would stop recording when the vocalisations had stopped for 3 seconds. 4) At the end of the recording of the problem behaviour, the DRO timer would be restarted. 5) If the DRO timer got to 10 seconds without stereotypic vocalisations, the teacher would give verbal praise (e.g. "Well done for working quietly") and the participant was given access to their preferred reinforcer for 2 minutes. 6) If the participant continued to work without engaging in the problem behaviour, more reinforcers could be earned. 7) If the problem behaviour occurred, the reinforcer was removed from the participant and the behaviour was recorded using event sampling.	Sessions lasted 1 hour and occurred 2-3 times per day.
38			Female 9 years old Autism	Stereotypic vocalisations		Sessions lasted 1 hour and occurred 2-3 times per day.
39			Female 10 years old Autism	Stereotypic vocalisations		Sessions lasted 1 hour and occurred 2-3 times per day.

	Citation	Study Design	Participant	Problem Behaviour & Setting	Intervention	Intensity
40	Wood et al. (2011)*	Multiple baseline across subjects ABC	Male 3 years old Developmental delay	Disruptive behaviour : refusing to participate, kicking, leaving the area <i>School</i>	Replacement behaviour: remaining in his seat, engaging in the activity, following instructions. 1) Before coming to school the participant would read the activity plan for the day. 2) When at school the participant could engage in an activity that they preferred doing. 3) The teacher would use pictures to outline the steps that would be involved in completing the activity before the participant could move onto the next activity. 4) The teacher would give the participant warning that the preferred activity would be ending (e.g., “start packing up the toys in 2 minutes”) 5) Teacher gives participant praise every 2 minutes for on-task behaviour. 6) Teacher provides access to preferred activities when participant completes tasks. 7) Teacher withholds the consequences that would normally reinforce the problem behaviour when it occurs.	3 days per week, 3 hours per day. Total of 13 sessions of intervention.
41			Male 4 years old Down syndrome	Disruptive behaviour : yelling, touching others during class time, leaving the area	As above with replacement behaviour : keeping hands to self, staying on the assigned area on the floor, engaging in the activity, looking at the teacher.	3 days per week, 3 hours per day. 9 sessions
42			Male 4 years old Autism	Disruptive behaviour : refusing to participate, calling out, crying	As above with replacement behaviour : following directions, transitioning to the correct activity, engage in the activity,	3 days per week, 3 hours per day. 5 sessions

	Citation	Study Design	Participant	Problem Behaviour & Setting	Intervention	Intensity
43	Devlin et al. (2011)*	ABBIT	Male 6 years old Autism	Aggression, self-injury : hitting, kicking, head-hitting <i>School</i> Participants had breaks every 5 minutes throughout the day with a 30 minute snack break and 45 minute lunch break	<i>A= Sensory integration therapy:</i> 1) Participants were given access to the SI room for 15 minutes prior to a computer activity task or contingent on the emission of problem behaviour. In the SI room, they could swing on a net swing, rolling on a peanut shaped ball, jump on a trampoline, etc. <i>B=Behavioural intervention</i> 1) Teacher would give the participant a puzzle with instructions to complete the task quickly. 2) If the participant started responding correctly within 2 seconds, the teacher praised him. 3) For every 6 th consecutive correct response, the participant would receive a tangible reward (e.g., DVD for 1 minute). 4) If the participant did not respond within 2 seconds, or performed the task incorrectly, the trial was restarted and the teacher provided the subject with prompts with increasing delays in prompting. 5) If the participant engaged in problem behaviour, the teacher physically blocked the response, averted eye contact and redirected the participant to the task. 6) After two minutes of on-task behaviour, the participant was offered a less preferred reinforcer. 7) If the problem behaviour occurred at any other time of the day, the participant was redirected to a new task (e.g., placing beads on a string) for 2 minutes. <i>BI= Differential reinforcement of alternative behaviour</i> 1) The teacher would deny access to a preferred item and instead offer an item of equal value 2) The participant was encouraged to use words “no thank you” or “no I don’t want it” to gain access to the preferred item. 3) If problem behaviour occurred, the reinforcer was removed and the participant was redirected to a less preferred task. C= Either A or B (which ever was most effective)	A= 6 times per day for 15 minutes over 3-5 days B= all day over the school day. BI occurred over 3-5 sessions C=8 sessions.
44			Male; 11 years old; Autism	Stamping feet, crying, tensing.		
45			Male; 10 years old; Autism	Hair pulling, scratching		
46			Male; 9 years old; Autism	Biting fingers		

	Citation	Study Design	Participant	Problem Behaviour & Setting	Intervention	Intensity
47	Whitford et al. (2013)*	Multiple baseline across contexts AB	Male 15 years old ADHD Learning disability	Disruptive classroom behaviour, “attitude”, serious lack of focus. <i>School</i>	Function-based intervention 1) Upon entering the classrooms where the intervention was occurring (algebra, English, Spanish), the teacher handed the participant an expectancy checklist. 2) The participant read the checklist. (e.g., when the teacher is talking I am: Sitting straight in my chair Not talking to others I am answering questions that I know) 3) If the participant was on-task, the teacher would provide verbal praise at least once every 5 minutes. 4) At the end of the class, if the participant had completed the assigned task, the participant was allowed time to himself or to quietly socialise with classmates who had also finished their work. 5) If the participant was off-task, the teacher redirected the participant once. 6) If the participant was still off-task, the teacher would ignore the participant while maintaining the task demand.	Algebra classes 43 minutes per day, 4 days per week. 32 sessions English classes 91 minutes per day, 2 days per week. 7 sessions. Spanish classes 43 minutes per day, 4 days per week. 21 sessions

	Citation	Study Design	Participant	Problem Behaviour & Setting	Intervention	Intensity
48	Sigafoos et al. (2008)	ABAB	Male 12 years old Autism ID	Perseverative requesting <i>School</i>	1) Participant was given a switch with a pre-recorded message “I want snack” with the words “snack” written across the switch. 2) The therapist showed the participant a box of crackers and a box of juice and stated “it’s not ready yet, you have to wait.” 3) The therapist then proceeded to prepare the snack (e.g., pouring the juice into a cup, or placing the cracker on a plate.) This lasted 30 seconds. 4) If the participant pressed the switch during this time, the behaviours were recorded as perseverative requests and the therapist moved the participant’s hand away from the switch for 5 seconds and repeated the phrase “It’s not ready yet, you have to wait”. 5) When the snack was prepared, the therapist said “OK, it’s ready now.” 6) The participant had 5 seconds to press the switch to indicate the snack they would like. 7) A switch press during the 5 second window of opportunity was regarded as the correct response. 8) The participant was given the requested snack item. 9) A second snack opportunity was presented. 10) If the participant did not make a correct request in the 5 second window of opportunity, the snack was removed from the table. 11) 10 seconds later another snack opportunity was presented.	Sessions occurred during morning snack time over 20 days.
49	Soares, Vannest & Harrison (2009)	ABAB	Male 13 years old Asperger syndrome	Tantrums, threats to self-injure <i>School</i>	12) The participant was given a self-monitoring checklist outlining the tasks that needed to be completed. 13) On the checklist were three activities per day for each of the five days the participant is at school during the week. 14) The participant was instructed using picture cards to complete three tasks during the session. 15) If the participant completed the tasks, the participant was allowed to paste a picture of mickey mouse’s face on the checklist.	Sessions occurred from the beginning of the school day until the tasks were completed for the day. The intervention occurred for 10 sessions and then an additional four sessions. Sessions occurred 5 days per week.

	Citation	Study Design	Participant	Problem Behaviour & Setting	Intervention	Intensity
50	Lancioni et al. (2009)	ABB ¹ AB ¹	Male 4 years old Severe ID	Body arching <i>School</i>	<p>A microswitch was presented to each of the participants. One participant could activate the microswitch by pushing his hand onto the switch and the other participant could activate the switch by pushing his back into the switch as it was attached to his wheelchair. A second microswitch was attached to the participants chair and to the other participant's legs. When the participant either arched his back (problem behaviour p1) or stretched his legs (problem behaviour p2) the second microswitch would be activated in phase 2 of the intervention.</p> <p>Intervention phase 1 (B)</p> <p>1) The participant was presented with the microswitch.</p> <p>2) The participant could press the microswitch.</p> <p>3) If the participant did not make any independent decision to press the microswitch the therapist guided the participant to activate the switch by either moving the participant's hand over the switch or guiding the participant to push his back into the switch.</p> <p>4) When the participant made contact with the switch, a preferred stimuli was activated for 8 seconds regardless of the presence or absence of problem behaviour.</p> <p>Phase B1</p> <p>1) Hand and back pushing responses that occurred in the absence of problem behaviour produced preferred stimuli for 8 seconds.</p> <p>2) If the participant arched his back during the interval with preferred stimuli, the preferred stimuli was interrupted.</p>	<p>Sessions lasted 5 minutes and occurred 5-14 times per day depending on the participant's availability.</p> <p>Phase B Participant 1: 36 sessions</p> <p>Phase B1 Participant 1: 73 sessions</p>
51			Male 13 years old Severe ID	Leg stretching		

	Citation	Study Design	Participant	Problem Behaviour & Setting	Intervention	Intensity
52	Chezan, Drasgow & Martin, 2014*	Multiple baseline across subjects ABC	27-years old Male Moderate ID Autism Mixed Bipolar disorder	Physical aggression, self-injurious behaviour, repeated verbal and motor behaviour. <i>Vocational Training Setting</i>	Functional Assessment and DTFA (discrete-trial functional analysis): Problem behaviour maintained by attention and automatic reinforcement. Intervention: Functional Communication Training: "I want to talk to you". The researcher stood near the participant and waited three seconds for the participant to initiate the correct response (i.e., "I want to talk to you"). If the participant independently initiated "I want to talk to you", the researcher would talk to the participant for 30 seconds. If the participant emitted a response within three seconds, though it was not the target response, the researcher immediately verbally prompted the participant to say "I want to talk to you". If the participant emitted the correct response, the researcher talked with the participant for 30 seconds. If the participant did not emit the correct response, the researcher left the area. Response contingent for access to attention. The participant reached acquisition criteria when they produced the alternative communicative response 100% of the time, across four sessions, consecutively.	Training sessions occurred 4-5 days per week. Intervention sessions were conducted contingent on emissions of problem behaviour (around eight trials per day).
53			32-years old Male Profound ID Schizophrenia	Physical and verbal aggression, property destruction, self-injurious behaviour.	Functional Assessment and DFTA: Attention and access to tangibles. FCT identical to above, however, the researcher used physical and gestural prompting to teach the participant to signal "please" to gain access to tangible items and physical prompting to assist with error correction.	
54			23-years old Female Severe ID Psychotic disorder NOS	Non-compliance, food stealing, physical aggression, absconding.	Functional Assessment and DFTA: Attention and access to tangibles. Functional communication training was almost identical to the training participant one received. However, this participant was instructed to use the mand "please" in order to gain access to tangibles, such as food or drink. Access to food or drink during the session was contingent on use of the mand "please".	

Table 3 Summary of the outcomes and Percent Non-overlap Data Analysis effect of single-subject interventions on the reduction of problem behaviour in 54 individuals with multiple disabilities. Studies that included functional analysis or assessment are denoted with an asterisk (*)

	Citation	Participants	Problem Behaviour	Outcome	PND Effect
1	Lancioni et al. (2013)	Male 19-years old profound ID and hemiplegia.	Hand mouthing	Mean percentage of session time hand mouthing reduced from 40 % at baseline to 7 % post-intervention	PND =100%
2		Female 20-years old Severe ID, non-ambulatory, visual impairment.	Drooling and hand mouthing	Overall result achieved at the end of 97-sessions of phase B ¹ (or 164-sessions from the beginning of the study). 60% hand mouthing at baseline, post-interventions hand-mouthing was nearly 0%. Hand mouthing was nearly 0% at the end of 18-sessions of phase B ¹ (or 41-sessions from the beginning of the study)	PND = 100%
3	Stokes & Luiselli (2009) *	Male 26-year old Prader-Willi syndrome	Rectal picking	Baseline averaged 3.8 incidents per week. During the final 25-weeks of the study rectal picking was absent. Frequency of rectal picking was 0 and stabilised from week 15 of the study (5-weeks of intervention).	PND =100%
4	Wrigley et al. (2010)*	Female Adult Severe developmental disabilities and legally blind.	Rumination History of SIB, aggression, property destruction, rumination.	At baseline, participant engaged in 33 rumination responses per session. During Intervention this dropped to 6.5 per session. Post-intervention the rate of rumination increased to baseline rates.	PND= 98.4%
5	McClean, Grey, McCracken (2007)*	Male 22-years old severe ID, autism.	Aggression: punching, kicking, slapping.	Rate (%) of physical aggression in 30-min intervals at baseline - 20-35%. Rates of aggression were nearly 0% and stabilising at about the 9 th month of intervention	PND =100%
6		Male 24-years old, Severe ID, autism.	Self-injury: head banging.	Frequency of head banging bouts at baseline - 300-350. Head banging reduced to 0 by the 4 th month of intervention and result was stabilised.	PND = 100%
7		Female 21-years old, mild ID, cerebral palsy.	Aggression: biting, punching, kicking.	Frequency of physical aggression at baseline was 38-42. Frequency of aggression reduced to 0 and stabilised by the 5 th month of intervention. Psychotropic medication rates dropped 66% post intervention.	PND = 90%

	Citation	Participants	Problem Behaviour	Outcome	PND Effect
8	McClean & Grey (2012)*	Male 21 years old. Severe ID, autism, Down syndrome	Aggression -punching Self-Injury : head banging	Rate of incidents of aggression reduced from 20 per week baseline to less than 3 incidents per week by week 7. Self-injury 5-7 per week baseline to 5 or less from week 5.	PND Aggression = 100% SI = 100%
9		Male 15 years old Severe ID, autism, ADHD	Aggression -scratching Self-Injury -hand biting	Aggression : baseline 20-30 per week to 0 per week by week 11. Self-injury : baseline 5-20 incidents per week to 0 by week 22.	PND Aggression = 100% SI = 100%
10		Male 23 years old Severe ID, autism	Aggression -punching	Aggression : baseline 20-32 incidents per week to near 0 at week 11.	PND Aggression = 100%
11		Male 17 years old Severe ID, autism, bipolar disorder	Aggression -hitting Self-Injury -hand biting	Aggression : baseline 22-35 per week to near zero at week 10. Self-injury : baseline 7-20 per week to 0 during B.4. rates of SI were erratic	PND Aggression = 100% SI = 40%
12	O'Reilly et al. (2012)*	Male 5 years old Autism	Elopement, yelling, flopping onto the ground	Problem behaviour dropped from 30-60% during no antecedent communication interventions to 0 : 20% during communication sessions	PND = 100%
13		Male 9 years old Autism	Aggression (i.e., biting others) Self-injury (i.e., biting self, slapping head)	Problem behaviour dropped from 30 : 40% to 0 : 10% during communication sessions	PND = 100%
14		Male 5 years old Autism	Elopement, yelling and flopping onto the ground	Problem behaviour dropped from 50 : 70% to 0-10% during communication sessions	PND = 100%
15	Sansosti (2012)*	Male 12 years old Aspergers syndrome & ADHD	Aggression, threatening behaviour, temper tantrums	Threatening behaviour was recorded at 13.67 at baseline and 1.75 during the intervention. Aggressive behaviour was recorded as 3.33 at baseline to 0.75 during the intervention	PND = 100%
16	Singh et al. (2008)	Male 17-year old Prader-Willi Syndrome and mild ID	Food-seeking, temper tantrums, skin-picking	Jason's weight was 256.3lb at baseline. At 3-years follow up Jason's weight was 190.7lb.	PND = 94.5%

	Citation	Participants	Problem Behaviour	Outcome	PND Effect
17	Pennington, Strange, Stenhoff, Delano & Ferguson (2012) *	Male 7-years old Autism	Eloping. Wandering away.	Prior to the intervention, elopement occurred 0-80% of the time during the sessions Elopement occurred 0-30% of the time during the intervention. After the intervention elopement occurred 0-40% of the time.	PND = 75%
18	Ingersoll, Walton, Carlsen & Hamlin (2013)	Male 15-years old Autism & ID	Mouthing objects Leg tapping	Prior to intervention self-stimulatory behaviours were variable. The percentage of intervals where mouthing occurred dropped from 0-100% at baseline to 0-40% during the intervention. Leg tapping dropped from 0-60% at baseline to 0-20% toward the end of the intervention.	PND = Mouthing = 3% Leg Tapping = 59%
19		Female 13-years old Autism & ID	Mouthing and throwing objects	Mouthing reduced from 20-100% of intervals recorded to 20% or less toward the end of the intervention. Throwing objects reduced from 40-80% of the time at baseline to 15%-80% of the time.	PND Mouthing = 81% Throwing Objects = 18%
20	Travis & Sturmey (2013)*	Male; 46-years old ID	Aggression- Slapping, kicking, threatening	The percentage of responses that were aggression dropped from 45-65% at baseline to 5-20% post-intervention. 70-90% of post-intervention behaviours were replacements.	PND = 100%
21		Male 32-years old ID	Aggression : slapping, kicking	Percentage of aggressive responses reduced from 60-75% at baseline to 5-15% post-intervention 70-85% of the responses were the replacement behaviours.	PND = 100%
22		Male 39-years old ID	Aggression - Verbal threats of harm to other people,	Percentage of aggressive responses reduced from 40-70% at baseline to 0-20% post-intervention. 80-90% of the responses post-intervention were the replacement behaviours.	PND = 100%
23	Robertson, Wehby & King (2013)*	Male 2 years 10 months Autism	Disruptive and aggressive behaviour : throwing objects, screaming, hitting.	The frequency of problem behaviours per 5 minute session dropped from 2 : 9 times per session at baseline to 0-3 times during the intervention sessions.	PND = 67%
24		Male 5 year 6 month old Autism	Disruptive, destructive, aggressive and self-injurious behaviour	The frequency of problem behaviours dropped from 9-27 per 5 minute session at baseline to 0-3 times per 5 minute session in the first two intervention phases.	PND = 88%

	Citation	Participants	Problem Behaviour	Outcome	PND Effect
25	Adkins et al. (2010)	Male 42 years old Mild ID	Aggression : yelling, threatening to fire staff members	Incidents of verbal aggression decreased from 4 times on average per week at baseline to 0.35 after mindfulness training.	PND = 96.1%
26		Male 25 years old Mild ID	Disrupting peers at work and Whining	Incidents of disruptive behaviour and whining decreased from 13.5 and 64 at baseline to 5.58 and 25.17 following mindfulness training.	PND = 100%
27		Female 22 years old Mild ID	Aggression : verbal aggression, property destruction, and physical aggression	The incidences of verbal aggression, property destruction and physical aggression per week reduced from 24, 19.5 and 12.75 at baseline, respectively, to 5.33, 2.67 and 1 per week following mindfulness training.	PND= 100%
28	Davis et al. (2012)*	Male 17 years old Autism Moderate ID	Screaming, hitting others, throwing objects, yelling	Problem behaviours ranged between four and 25 occurrences at baseline and reduced to zero during FCT. Problem behaviour increased to 15 on average during the second baseline phase. The return to FCT sessions f resulted in an average of four occurrences of problem behaviour during the FCT sessions.	PND = 100%
29		Male; 12 years old Autism Severe ID	Running away, throwing objects refusing to move	Problem behaviours occurred 12 and 15 times during baseline and reduced to between zero and six times throughout the multiple conditions of FCT training.	PND = 100%
30		Female; 8 yrs. old Moderate ID Cerebral Palsy	Hitting others faces with closed fist	Problem behaviour occurred 19 times on average during baseline sessions and reduced to between two and four occurrences and then further remained at zero following the final phase of FCT training.	PND = 100%
31		Male 18 years old Mild ID	Leaving the classroom, physical aggression	Problem behaviours averaged around 92 at baseline and decreased to zero during FCT and remained between zero and three throughout the remainder of the FCT conditions.	PND = 100%

	Citation	Participants	Problem Behaviour	Outcome	PND Effect
32	Bloom et al. (2013)*	Male 5 years old ID Developmental delay	Aggression and property destruction	Tangible condition: Problem behaviour reduced from 0.5-2 times per minute at baseline to 0 throughout the intervention. Alternative behaviours occurred between 2-3 times per minute towards the end of the intervention. Escape condition: Problem behaviour reduced from 0-3 times per minute at baseline to 0 throughout the intervention sessions. Alternative behaviour increased to about 2 times per minute throughout the intervention.	PND = Tangible = 100% Escape = 100%
33		Male 4 years old Autism ID	Aggression and tantrums	In the tangible condition, problem behaviour had reduced from 1-4 responses per minute at baseline to 0 during the intervention and alternative behaviours occurred 4-5 times per minute during the intervention. In the escape condition, problem behaviour had reduced from 0-5 times per minute at baseline to 0-3 times during the intervention and alternative behaviours occurred 2 times per minute in the last three sessions of the intervention.	PND = Tangible = 100% Escape = 50%
34		Male 4 years old Autism ID	Mouthing	During NCR sessions the appropriate competing response occurred during 90-100% of the time. The number of times the problem behaviour occurred had reduced from on average 4 times per minute at baseline to 0 to 1 times per minute during NCR sessions.	PND = 90%
35	Echeverria & Miltenberger (2013)	Male 51 years old Moderate ID	Rapid food consumption - choking	The number of bites of food per minute decreased from 6-10 at baseline to 3-6 throughout the intervention.	PND = 96%
36		Male 32 years old Moderate ID	Rapid food and drink consumption – choking	The number of bites per minute reduced from 6-8 at baseline to 3-4 throughout the intervention	PND = 100%

	Citation	Participants	Problem Behaviour	Outcome	PND Effect
37	Rozenblat et al. (2009)	Male 9 years old Autism	Stereotypic vocalisations	Number of minutes spent engaging in stereotypic vocalisations reduced from 25-45 minutes per session at baseline to 0-40 minutes per session during the intervention.	PND = 84.7%
38		Female 9 years old Autism	Stereotypic vocalisations	The number of minutes spent vocalising reduced from 25-50 minutes per session at baseline to 0-35 minutes per session throughout the intervention.	PND = 84.6%
39		Female 10 years old Autism	Stereotypic vocalisations	The number of minutes spent engaging in stereotypic vocalisations reduced from 25-45 minutes per session at baseline to 0-10 minutes in the final phase of the intervention.	PND = 58.8%
40	Wood et al. (2011)*	Male 3 years old Developmental delay	Disruptive behaviour : refusing to participate, kicking, leaving the area	On-task behaviours occurred during 20-55% of the sessions at baseline and increased to 5-90% of the time during sessions throughout the intervention.	PND = 69%
41		Male 4 years old Down syndrome	Disruptive behaviour yelling, touching others during class time, leaving the area	On-task behaviours occurred during 0-20% of the sessions at baseline and increased to 60-90% of the time during sessions throughout the intervention.	PND = 100%
42		Male 4 years old Autism	Disruptive behaviour refusing to participate, calling out, crying	On-task behaviours occurred during 0-30% of the sessions at baseline and increased to 95-100% of the time during sessions throughout the intervention.	PND = 100%

	Citation	Participants	Problem Behaviour	Outcome	PND Effect
43	Devlin et al. (2011)*	Male 6 years old Autism	Aggression, self-injury : hitting, kicking, head-hitting	The frequency of challenging behaviour had reduced from 7-15 times per session at baseline to 0-15 times during the behavioural intervention and increased to 0-35 in the sensory integration sessions. Behavioural interventions were continued for an additional 8 sessions. Problem behaviour further reduced to 0-12 times per session.	PND = 87.5%
44		Male 11 years old Autism	Stamping feet, crying, body tensing.	Problem behaviour (PB) occurred 7-12 times per session at baseline. Problem behaviour occurred 6-10 times during the sensory integration sessions and 2-4 times during the behavioural intervention. The behavioural intervention was implemented for an additional 8 sessions. Problem behaviour occurred 2-6 times per session.	PND = 100%
45		Male 10 years old Autism	Hair pulling, scratching	PB occurred 5-12 times per session at baseline. PB occurred 0-15 times during SIT and 0-4 times during BI. PB occurred 2-35 times during an additional 8 sessions of BI	PND = 14%
46		Male 9 years old Autism	Biting own fingers	PB occurred 9-14 times per session at baseline. PB occurred 4-11 times during SI and 1-8 times during BI. PB occurred 0-6 times during an additional 8 sessions of BI	PND = 100%
47	Whitford et al. (2013)*	Male 15 years old ADHD Learning disability	Disruptive classroom behaviour, “attitude”, serious lack of focus.	Algebra=Percentage of time spent on-task increased from 12-30% of sessions to 75-95% of sessions during the intervention. English=Percentage of time spent on-task increased from 20-50% of sessions to 90-100% of sessions during the intervention. Spanish= Percentage of time spent on-task increased from 25-80% of sessions to 90-95% of sessions during the intervention.	PND Algebra = 100% English = 100% Spanish = 100%
48	Sigafoos et al. (2008)	Male 12 years old Autism ID	Perseverative requesting	Number of requests during baseline were between 15-24 for low preference items and 20-23 for high preference items. During the first intervention phase, the number of requests were between 4-14 for HP and 1-10 for LP items. The second intervention phase, requests were between 0-5 for both HP and LP items.	PND HP = 93% PND LP = 87.5%

	Citation	Participants	Problem Behaviour	Outcome	PND Effect
49	Soares, Vannest & Harrison (2009)	Male 13 years old Asperger syndrome	Tantrums, threats to self-injure	At baseline the participant completed 0-1 task per day and tantrums occurred 1-5 times per day. During the first intervention phase, the participant completed 1-3 tasks per session and tantrums occurred 1-4 times per day. During the second intervention phase, the participant completed 2-3 tasks per session and tantrums occurred once per day.	PND = 92%
50	Lancioni et al. (2009)	Male 4 years old Severe ID	Body arching	The mean time spent engaging in problem behaviour was 4 minutes per session at baseline and at the end of the intervention phases the mean time spent engaging in the problem behaviour was around 40 seconds per session. The number of times the participant used the hand-pushing response to activate the microswitch was 8 times per session at baseline and increased to 23 (b phase) and then 31 (b1 phase)	PND = 100%
51		Male 13 years old Severe ID	Leg stretching	The mean time spent engaging in problem behaviour was 4 minutes per session at baseline and after the intervention sessions the mean time spent engaging in problem behaviour had reduced to an average of 40 seconds.	PND = 100%
52	Chezan, Drasgow & Martin, 2014*	27-years old Male Moderate ID Autism Mixed Bipolar disorder	Physical aggression, self-injurious behaviour, repeated verbal and motor behaviour.	40 intervention sessions or 320 trials to acquisition of "I want to talk to you".	PND = 18%
53		32-years old Male Profound ID Schizophrenia	Physical and verbal aggression, property destruction, self-injurious behaviour.	29 intervention sessions or 232 trials to acquisition of "please".	PND = 24%
54		23-years old Female Severe ID Psychotic disorder NOS	Non-compliance, food stealing, physical aggression, absconding.	18 intervention sessions or 144 trials to acquisition of the FCT sign "please".	PND = 72 %

CHAPTER 3

METHOD

The design of the study was a single-case multiple baseline across activity settings design in an ABC format (i.e., Functional Assessment Baseline, Intervention, and Follow-up). The behaviour was observed and recorded during meal-times, care-tasks, free-time, and transportation (Table 4.).

Ethical Approval

Ethical approval for this study was obtained from The University of Canterbury Human Ethics Committee.

Informed consent involved a four-step process. Step one was to gain consent from a respite care provider for initial participation. Initial participation involved the nomination of individual clients with problem behaviour and staff to participate. Step two was to gain informed consent from the client to participate in a functional assessment of the nominated problem behaviour. Step three was to gain consent from the respite care staff and step four involved consent for the implementation of the behaviour support plans at the respite centre.

Once the respite care provider had consented, they nominated potential participants, including nomination of their problem behaviour and the staff who work with the client. Once nominated, the respite care facility invited clients and staff to participate in the functional assessment. Consent for the functional assessment was gained from the client and their parents. Informed consent procedures were followed to gain consent of individuals with multiple disabilities, their parents and the respite staff who work with the individual to conduct a functional assessment.

The information from the functional assessment was used to guide the preparation of positive support plans for an intervention to reduce problem behaviour. Step four involved gaining consent from the individual with multiple disabilities, the parents of the individual with multiple disabilities, the respite care provider and the respite staff to implement the positive behaviour support plans at the respite care facility. All procedures were able to be modified to meet ethics committee requirements. A copy of the letter of approval from The University of Canterbury Human Ethics Committee (see Appendix A) and copies of the approved information sheets and consent forms are included in the Appendix (see Appendix B, C, D, E, F, G, L, M, O).

Participants

The respite care provider nominated three participants who frequently attended the respite centre and who meet inclusion criteria. The following criteria needed to be met for inclusion: (1) participants will be aged between 18-years and 30-years old, (2) have an intellectual disability and (3) an additional developmental, neurological, sensory or physical disability, and (4) exhibit problem behaviour (e.g., self-harm, screaming, or absconding). Exclusion criteria are: (1) participants that have a diagnosed mental health problem, (2) are aggressive towards others, and (3) have hepatitis or other communicable diseases.

Setting

The respite centre had seven bedrooms and could sleep up to seven people at any one time. The average length of stay was one to three nights per week, though, some clients stayed one weekend per month (i.e., Friday night to Monday morning). People who stayed weekly were on a rotating roster (e.g., coming in on Saturday this week, Sunday next week, etc.) or had set days (e.g., Monday to Thursday every week) organised by the manager of the respite centre. There were permanent staff members who regularly worked in the respite

centre and there were normally two or three staff members present during day or evening shifts. Most of the shifts available at the respite centre were covered by permanent staff. However, there was a pool of casual staff members at the respite centre that could be called upon to cover permanent staff who were on annual leave or sick. The respite staff members came from a range of different nationalities and cultures and some had formal qualifications (e.g., nursing). The respite care provider offered regular training opportunities within the organisation on a range of different topics relevant to the support worker role that all staff members were expected to attend (e.g., health and safety, non-violent crisis intervention). For example, staff were trained in active support (i.e., hand-over-hand support during activities).

A typical schedule of the activities that took place during a client's stay from a Friday evening to a Saturday evening at the respite centre is shown in Table 4 and the average time spent in each activity is shown in Table 5.

Table 4 *Typical Weekend Respite Care Schedule*

Day and Time	Activity
Friday 3:00pm	Pick up from placement/school in respite centre van/or taxi
4:00pm	Arrive at the house, choose a bedroom, unpack items, get settled, self-care
4:30pm	Drink and small snack (one biscuit or pack of chips)
4:45pm	Free time (e.g., watch TV, listen to music, interact with other flatmates/staff, go for a walk)
5:30pm	Go in the van for a drive to pick up fish and chips
6:00pm	Arrive at the house, set the table, organise drinks
6:10pm	Dinner is served. Some people may require staff assistance to eat, medication given.
6:30pm	Clear table, help with dishes.
6:45pm	Free time (e.g., watch TV, listen to music, play games, chat with others)
7:30pm	Get dressed for bed, shower, self-care
8:30pm	Supper (e.g., one piece of fruit and hot drink)
8:45pm	Free time (e.g., watch TV, interact with flatmates/staff)
9:15-9:30pm	Brush teeth, go to bed, read a book
10:00pm	Sleep
Saturday 8:30am	Wake up, shower, self-care, get dressed, make own bed
9:00am	Make breakfast, eat, medication
9:30am	Clean up, brush teeth, do laundry

Day and Time	Activity
10:00am	Free time (e.g., watch TV, go for a walk, interact with flatmates/staff)
10:30am	Get into van to go on an outing (e.g., bowling, picnic at park, beach)
12:30pm	Arrive back at house, make lunch, eat, medication
1:30pm	Clean up table/kitchen area.
1:45pm	Rest/relaxation on bed, self-care
3:00pm	Free time (e.g., go for a walk, play outside, interact with flatmates/staff)
4:30pm	Help prepare dinner, set the table
5:30pm	Dinner time, eat, medication
6:15pm	Clean up kitchen/dining area
6:30pm	Free time (e.g., watch movie, do a puzzle, play games)
8:00pm	Get dressed for bed, showers, and self-care
8:30pm	Supper
8:45pm	Free time
9:30pm	Brush teeth, go to bed, read a book
10:00pm	Bedtime

Table 5 *Average total time in respite care activities from Friday 3pm to Saturday 10pm.*

Activity	Total Minutes in Activity (approx.) Fri PM – Sat PM
Meal-related	5 hours 15 minutes
Care-related	2 hours 30 minutes
Free-time	7 hours 30 minutes
Transportation-related	2 hours 30 minutes

Procedures and Measures

Baseline Functional Assessment

The baseline phase comprised of two parts. Part one involved interviews with caregivers and respite staff to gain information about the participant and the target behaviour and part two involved direct observation and recording of the participant five times within each of the four different settings during their stay at the respite centre.

Interviews with Informants

The Functional Analysis Screening Tool (FAST) is a 16-item dichotomous scale (i.e., yes/no) that assesses the events that take place before and after problem behaviour occurs to

help identify a pattern or relationship between specific events and the occurrence of problem behaviour (Iwata, DeLeon & Roscoe, 2013). The FAST is moderately reliable ($\alpha = 0.71$). When the FAST is used with multiple informants, the FAST has produced results consistent with those that would be produced by a functional analysis (Iwata, DeLeon & Roscoe, 2013) indicating the FAST is a valid tool when used with multiple informants. Thus, the FAST may be useful for eliminating the need for test conditions in functional analyses when given to multiple informants.

The *FAST* assessment tool was given to two different people for completion with respect to any specific service user. The people who were selected to complete the *FAST* assessment were the parents of the participant and a nominated staff member in the respite facility. The family interview was conducted at the participant's home with the participant, her parents and sister. The interview lasted 45 minutes. The respite staff interview was conducted at the respite centre with one respite staff member. The interview lasted 40 minutes. The FAST was coded by circling the "yes" responses to items and then counting up the number of "yes" responses within each subscale (or differing functions of behaviour). The subscale that yielded the most "yes" responses represents the function that is most likely to contribute to the occurrence of the target behaviour. In addition, the researcher modified the assessment tool to allow the informant to make comments about each of the questions in addition to their 'yes/no' response. Results from the *FAST* assessment provided information about the types of positive and problem behaviours the individual displayed and the settings where the behaviour occurred. This helped the researcher to form a cluster of related problem behaviours and positive behaviours to observe. On completion of the assessment, the participants were offered koha for their participation in the assessment. The koha was a grocery shopping voucher equivalent to \$10.00 in total.

Direct Observation of Target Behaviour

A functional assessment ABC observation form was used to observe target problem behaviour and positive behaviour. The ABC observation form was used to record antecedent events – what happened before the behaviour occurred, target behaviour – what the individual was doing when they were engaging in the target behaviour, and consequences – what happened after the individual had stopped engaging in the target behaviour. The participant was observed at regular intervals by the researcher who recorded the events and behaviours that both preceded and followed target behaviour. The ABC form was adapted from Bijou, Peterson and Ault (1968) and individualised to the participant and behaviour. An example of the ABC observation form used can be seen in Figure 2.

ABC Observation Form

Participant:		Observer:	
Setting:		Date:	
Cluster of Problem Behaviours to Observe <i>(based on functional assessment)</i>			
Time	Antecedent	Behaviour	Consequence

Figure 2. ABC Observation Form

Direct observation of the participant was carried out at the respite facility for two afternoons per week between 2:30pm and 6:00pm over two weeks when the participant was residing at the respite facility. The researcher used event-sampling to observe a cluster of problem behaviours (identified in *Interviews with Informants*) that each participant may display across four different settings during the duration of their stay. The setting and times

for direct observation were during meal times, personal care, transportation and free-time because these activities are routine for the residents at each of their visits. The researcher recorded observations in a *functional assessment ABC observation form (Figure 2.)*. The researcher wrote the time at which the target behaviours occurred, the duration of the target behaviours, and the specific characteristics observed about the target behaviours. Secondly, the researcher identified the event or behaviours that occurred immediately prior to the target behaviour and any events leading up to the occurrence of the target behaviours. Thirdly, the researcher recorded the events and behaviours that immediately followed the occurrence of the target behaviours. In addition to observing the antecedent events, the target behaviour and the consequences, the researcher also recorded the location in which the target behaviours occurred and the frequency, latency and/or duration of the target behaviours, depending on the nature of the problem behaviour.

Formulation Phase

Formulating a plan for the intervention involved four steps. First, the information collected from the functional assessment was summarised and interpreted to create a hypothesis about the function of problem behaviour. Potential replacement behaviours were identified from the identification of positive behaviours. Step two involved reviewing literature specific to the target behaviour and identifying evidence-based interventions. Step three involved planning the intervention and a secondary intervention as a backup and writing up the intervention and back-up intervention as positive behaviour support plans. Step four involved presenting the plans to the participant and gaining consent from the participant, the caregiver of the participant and the respite staff, to both of the suggested evidence-based interventions. The intervention would not go ahead without consent.

Formulating a Case for the Function of the Target Behaviour

The results of the functional assessment in the baseline phase were used in accordance with support from the researcher's supervisors to develop a hypothesis about the function of the participant's behaviour. The function for the behaviour may have been to gain attention, to escape an undesirable situation or task, automatic reinforcement, to obtain something tangible or because of physical discomfort. The hypothesis for the function of the problem behaviour drove the review of literature on evidence-based interventions to reduce problem behaviour. In addition, positive behaviours which could replace the problem behaviour in function were identified.

Literature Review on Evidence-Based Interventions

The literature review covered two types of evidence-based interventions. Firstly, interventions that focus on reducing the specified problem behaviour were identified. Secondly, interventions that taught skills to enhance communication or improve the skill level of the positive behaviour identified were reviewed. For example, if the target behaviour was 'hitting others' and the function of the behaviour was 'to escape an undesirable situation' the first part of the review would focus on interventions that reduce the target behaviour (e.g., hitting others). The second part of the review would focus on interventions that taught skills or strengthened positive behaviours that were already in the participant's repertoire. For example, an intervention that taught a participant an appropriate behaviour (e.g., saying "no") for when they wished to escape an undesirable situation. Interventions that were shown to produce good quality effects shortly after the intervention was implemented were preferred, as opposed to interventions that took multiple sessions before an effect could be seen. This is because the duration of participant stays in the respite centre are brief and thus an

intervention that produced good results quickly may have been more likely to be successful in this particular setting.

Planned Intervention and Secondary Intervention

Two interventions were selected from the findings in the literature review on evidence-based interventions that reduce the specified target behaviour. The two interventions chosen were the most effective and/or suitable interventions for reducing the target behaviour and/or increasing appropriate alternative behaviour for the participant. Each of the suggested interventions were described in one to two pages stating the advantages of each intervention and what the intervention would involve, using the format of positive behaviour support plans. The interventions were individualised to meet the needs of the participant in the study. Interventions were chosen based upon the function of the target behaviour.

Self Determination of Intervention

The suggested interventions were presented to the participant and their parents in the form of positive behaviour support plans, to ensure that the participant was given the right to make an informed choice, give their informed consent and have support, as is stated in *Right 7 and 8 in the Code of Health and Disability Services Consumers' Rights* (Health and Disability Commissioners Office, 1994). The participant was then able to choose which intervention they wanted to occur first, and if required, which intervention would be implemented second. The purpose of selecting a secondary intervention was to ensure there was an alternative if the first intervention did not reduce the participant's problem behaviour. Thus, the secondary intervention would only be carried out if the primary intervention did not reduce the target behaviour.

The proposed positive behaviour support plans were presented to the caregiver of the participant, the staff at the respite centre and the participant themselves. Caregivers, respite staff and the participant needed to consent to the researcher and potentially the other respite staff implementing the proposed primary and secondary interventions with the participant. The proposed behaviour support plans were discussed with the individual, the caregivers and the respite staff. For example, how the proposed intervention was likely to affect the participant or whether the intervention was going to be practical. Caregivers and respite staff have regular contact with the participant and may have had helpful suggestions to modify the intervention to suit the participant. If necessary, the researcher was prepared to modify, rewrite and represent the positive behaviour support plans to gain consent. The interventions were explained to caregivers, respite staff and participants in detail so that they knew exactly how the proposed interventions would be implemented. The requirements of training and preparation were included in the positive behaviour support plans, and the information was clear in the information sheets as well. Explaining the intervention processes to the caregiver and respite staff in detail helped the researcher to maintain a transparent relationship and develop a strong therapeutic alliance with the people who were important to the participant. Caregivers may have also wanted to know how the intervention would be implemented for their own use at home in future.

Baseline Phase

The initial baseline data was collected well over one month before the intervention was proposed to take place, thus two weeks of baseline observation data was conducted prior to the intervention to ensure that the problem behaviour was consistent with previous recordings of baseline data. Training of respite care staff in the steps of the interventions occurred during this period of time.

Intervention Phase

The intervention for each positive behaviour plan was implemented over the duration of one to two respite stays (i.e., two to four nights in total), and the observational measures were repeated during this period. The researcher was available to coach, scaffold and support the respite care staff in the implementation of the strategies as needed.

If the frequency of problem behaviour did not decrease in a timeframe similar to that of the original study the intervention was adapted from, the primary intervention would have been faded. For example, if the intervention study showed that target behaviour reached a desired level by day five, it may be expected that participants in this study reach the desired level of behaviour over two weeks, equivalent to two of their visits to the respite centre. Only if the primary intervention is faded would the secondary intervention have been implemented, if consent for the second intervention was gained. If problem behaviour had reduced when the primary intervention was in place and did so in a similar timeframe to the original intervention study, the secondary intervention would not be implemented.

At the end of the intervention phase a discussion was held with the participant, their family members and staff to review changes in problem and positive behaviours, and to make a decision as to whether the intervention strategies should be faded or maintained within the setting. This was dependent on the type of intervention and the behavioural changes recorded. On completion of the intervention phase, the participant was offered koha in the form of a \$10.00 grocery shopping voucher as a thank you for participating in the intervention.

Follow-up Phase

During the follow-up phase, observations were continued. The procedures used by the staff to fade intervention strategies, or to remove intervention strategies, or otherwise would

have affected the type of observation conducted. When the researcher had recorded the frequency of the target behaviour and/or the frequency of alternative positive behaviour from the participant in each of the activity settings over five time intervals, the study came to a close and all people involved in the intervention were debriefed (see Appendix O).

Social Validity

Problem behaviours are likely to reduce an individuals' ability to freely access community resources and this reduces opportunities for learning adaptive skills that may increase independence. Thus, the main treatment goal in this study was to reduce problem behaviour. To assess the social validity of the intervention, the Abbreviated Acceptability Rating Profile (Tarnowski & Simonian, 1992) was given to the parents of the participant and the respite staff who were directly involved in the care of the participant. The Abbreviated Acceptability Rating Profile (Tarnowski & Simonian, 1992) contains eight items that rate the acceptability of the intervention using a Likert-type rating scale with points from 1 (strongly disagree) to 6 (strongly agree). The scales internal consistency was excellent ($\alpha = .95 - .97$) (Tarnowski & Simonian, 1992). This scale was preferable as it can be used with multiple informants and it is brief. The only alteration to the scale included rephrasing the items to say "young person" rather than "child" when referring to the participant

CHAPTER 4

IMPLEMENTATION AND RESULTS

Functional Assessment

Consent from Agency for Initial Assessment

The agency was approached and a meeting was held with the respite care manager, the manager of quality and training and the researcher, following approved informed consent procedures. At the beginning of the meeting, each manager was provided with an information pack detailing information about the study. The information pack contained separate information sheets and consent and assent forms for the agency, respite staff and family and participant. The information sheets explained the steps that would be involved in the study for each individual involved (i.e., managers, family, respite staff and participant). An example of an intervention instruction sheet was provided in the information pack to give the people involved in the study an idea of the types of interventions that may be implemented with the participant (see Appendix B). The managers looked through the information pack for around 15 minutes and then held a discussion about the participants who met the criteria in the study. Both managers were very happy to consent to the research (see Appendix C). The managers established a list of five possible participants. The meeting duration was 45 minutes.

Meeting with Supervisors

The researcher and the supervisors discussed the potential participants, based on the information available to the researcher from her experience and meeting with the managers. This included information about their abilities, diagnosis, medication, positive and problem behaviours. Two people were identified as potential participants who could be included in the

study. Two other potential candidates did not meet all of the criteria for inclusion. One participant had a change in family circumstances and was therefore no longer eligible.

Consent from family and Assent from Helena to participate in Assessment

The second possible participant has been given the pseudonym 'Helena' to protect her identity. Helena and her family identify with a culture other than New Zealand European. Helena's sister was fluent in English and helped with translating between her parents and the researcher, as the parents spoke limited English and the researcher does not speak their language. The meeting was held with Helena's mother and sister. The meeting lasted 10 minutes as the sister had thought the discussion would be over the phone and the researcher had called in to their home. The researcher left the information pack (see Appendix D) with the family to look through and gave a brief personal introduction and some key points about the study. The family were told that the researcher would contact the family in about a week to give them time to read over the information and think about whether they would like to participate. The following week, the researcher contacted the family and asked if they were interested in participating in the interview. The sister stated that they would be happy to participate and arranged a time to meet the following week. The researcher explained to the family that the interview would be confidential and showed them the assent form for which they could sign if they were willing to participate. Helena's mother signed the assent form (see Appendix E).

Consent from Respite Staff for Initial Assessment

At a meeting of the staff of the centre, the researcher presented the study and handed out an information pack (see Appendix F) for each staff member present at the meeting regarding consent to participate in the assessment, including interviews and observations as relevant to a particular participant. Staff members raised concerns about the duration and

effort that would be required from staff to implement the interventions in the second step of the project. The researcher explained that (a) there would be a second consent process for the staff before agreeing to the intervention and (b) it was intended that the interventions that would be sought for each individual would be short in duration (i.e., two stays at the respite centre) and involved limited or reduced effort from the staff members over time, if at all possible. Staff members seemed contented with the proposed study and looked forward to hearing about the interventions. The staff consented to participate in the assessments as the first step and signed the approved ethics forms (see Appendix G).

Findings from the Functional Assessment and Observation

Helena

Helena is a 27 year old woman of non-European descent who was born in New Zealand. She has been diagnosed with Autism, an intellectual disability and epilepsy. Helena is fairly short in stature (around 5ft.), has medium-length dark hair and is fairly stocky in build. Helena is a very lively person. When she is happy she is often seen smiling, walking around, laughing and vocalising. Helena has been attending the agency for respite care for more than seven years. The house where she currently stays for respite is the same house she has been attending for more than two years. Helena has attended a New Zealand school for children with special needs since she was five years old. When Helena turned 21 years old she started to attend work placement for adults with special needs Monday to Friday from 9:00am to 3:00pm and attends the respite centre for two nights during weekdays (Monday to Friday). The staff at the respite centre provided active support by assisting Helena to complete tasks with hand-over-hand assistance. Some of these tasks may include brushing teeth or hair.

Helena's family is non-European. She lives at home with her mother (her primary caregiver), father, sister and brother. Her mother and father predominantly spoke their native language and have limited English. Helena's siblings spoke both languages and Helena's sister has been particularly helpful in translating between their language and English during family meetings with other agencies. At home, Helena's family spoke their native language and listen to music of their culture. When Helena was at work and at the respite centre, staff and other clients spoke to Helena in English.

Epilepsy and Medications

Helena has been prescribed sodium valproate for seizures that began when she was three months old and in recent years has been taking 15ml of sodium valproate twice each day (morning and night). At this prescribed dosage, she often experiences absence seizures, usually occurring about one hour after she has fallen asleep. When Helena is having an absence seizure her eyes will twitch and she will normally wake up and vocalise or scream. After a minute or two she will go back to sleep and will not have another seizure for the rest of the night. Helena has not experienced any known side effects as a result of taking the prescribed medication.

Personal Grooming

Helena requires full assistance with all tasks that involve personal grooming. This includes toileting, showering and dressing. When Helena has finished showering she is encouraged to take her laundry to the laundry basket by the washing machine at home and at the respite centre.

Toileting and Continence

Helena wears incontinence products (i.e., pull ups) during the day and at night. Her family and staff at the respite centre occasionally encourage her to sit on the toilet, though Helena will often stand up soon after she has been asked to sit down on the toilet and will walk around the bathroom with her pants down slapping her thighs, whether staff are present or absent. At home her mother will put her on the toilet prior to having a shower and getting dressed in the morning, and at night, just before going to bed. Helena seldom urinates in the toilet, though her family and the respite staff try to encourage her to use the bathroom at set times during the day (i.e., when she gets up in the morning, after meals and before bed). Helena needs to have hand-over-hand assistance to wash her hands before meals and after using the toilet.

Communication

Helena's verbal communication is very limited. The only time she verbalises is when she sings parts of songs and this is often interpreted as a good sign that she is feeling happy. Helena uses some non-verbal expressions in the form of hand gestures to communicate her desires. Helena is particularly motivated to use non-verbal expression when she is dealing with food. She would point to the item of food and then point to her chest. This action would sometimes result in a staff member giving her the item of food she requested. Another way that Helena communicates non-verbally is by holding onto the hand or arm of another person, usually staff or family and leading the person in the direction of something she would like to do or to obtain. For example, if a door is locked, Helena may grab the hand of a staff member and lead them to the door and then wait for the staff member to unlock the door so she can go outside. However, if a staff member is unable to understand what Helena wants, Helena may proceed to engage in problem behaviour. For example, if Helena has indicated that she would

like a particular item of food and staff have ignored or missed this request, Helena may take the food when staff are busy or absent. In addition, Helena may be less likely to use the non-verbal expressive communication she already possesses because it does not always result in obtaining the item she desires.

Evidence of Helena's receptive communication is limited. Helena occasionally shows that she is listening by following requests that are communicated to her in either her family language or in English. For example, at home Helena's mother may ask her to put her clothing into the laundry basket and Helena is often good at completing this request with a verbal prompt from her Mother. However, family and staff report that compliance with requests is sporadic and her motivation to follow requests tends to increase when food is involved. For example, if someone is standing in the kitchen and asks Helena to "please come here" Helena normally walks over to the kitchen area quickly. Helena does not have an augmentative communication system in place at home or at the respite centre.

Food and Eating

Helena loves food. Her favourites include rice, noodles, fruit and lettuce and she can be observed running toward the kitchen if she hears that food is being prepared when she is at home or at the respite centre. At home, Helena seldom eats red meat, dairy products, processed foods (i.e., takeaways) or sweets. She normally eats white meat (e.g., pork, chicken or fish) with dinner most nights of the week and rice twice per day every day. At the respite centre, Helena eats minimal dairy products (e.g., a slice of cheese once per visit), red meat once per week and will have rice once per day with dinner. When Helena is given a meal, she will be provided with a fork and a spoon and is encouraged to use her utensils to eat. She can feed herself with utensils, though she has a tendency to use a spoon in her right hand and use her left hand to put food into the spoon. Staff may place the utensils in her hands if they

observe her trying to eat using her hands. Sometimes staff or family members may feed her to reduce the level of mess she can create when feeding herself. If staff provide assistance with feeding, they normally give Helena an opportunity to feed herself and then may assist her toward the end of the meal. Helena has a habit of stealing food from others if there is food within her reach. If she cannot reach the food she may gesture that she would like the item of food or walk toward the item and take it without asking.

Social Skills and Friendships

Helena seemed to enjoy the company of others. She liked to interact with particular people who also stayed at the respite centre such as a female client named Adriana (pseudonym) who is about 13 years younger than Helena. Adriana can walk though she can be unsteady on her feet and so also uses a wheelchair and Helena particularly liked to interact with Adriana when she was in her wheelchair. An example of Helena's interactions with Adriana included smiling while rocking back and forth and pointing to her chest and to her palms while singing and vocalising to Adriana. Helena would sometimes come up behind staff members and try to hug them from behind (around their neck). When Helena did this she was smiling and happy, though staff members sometimes discourage her putting her arms around them as Helena has a habit of putting her hands down her pants and her hands may be unclean. When Helena has her arms around a person's shoulders she may also try to bang her head against their head and smile or laugh.

Transportation

Helena liked to sit in vehicles. When she was in a vehicle she would rock her body, whether the van is in transit or stationary. When she was in the van, she would like to clap, vocalise and rock back and forth to show her enjoyment about being in the van. Sometimes she would rock so forcefully that the whole vehicle shook and the driver would find this

distracting. Helena often had difficulty getting out of the van. If she did not want to get out of the van she would push her body into the back of the seat. This occurred when she arrived at the respite centre, when she arrived at her work placement and when she arrived at her own home. She had less difficulty getting out of the van when staff or family members took her to places within the community.

Likes and Dislikes

Helena enjoyed listening to music, being outside and rocking her body when she was in a vehicle. Helena appeared to have good rhythmic skills and could create repetitive patterns by slapping her body and clapping. Sometimes she liked it when people copied her body slapping patterns: she will smile, laugh and vocalise. Helena was very tactile and enjoyed taking signs off walls and ripping or rolling them. This may include pieces of laminated paper, books or magazines.

Helena portrayed some behaviour that can be problematic for herself or for others. Some of her problem behaviours included pica, running away, stealing food and hitting herself in the head. The types of non-edible objects Helena would try to consume included soil, rocks, leaves and flowers. These behaviours have been occurring for at least two or three years and are more likely to happen when she is feeling energetic and happy.

Results of Functional Assessment

The results section below describes two behaviours that the family considered to be the most problematic during the functional assessment, a formulation of hypotheses for these behaviours, a review of interventions for the identified behaviours and the results of the application of a chosen intervention plan.

Nominated Problem Behaviours

Problem Behaviour One: The first behaviour that the family and respite staff members found to be problematic is Helena's food stealing behaviour. Helena appears to enjoy eating food and would often take food without asking so long as it is within her reach, regardless of whether she has just eaten a meal or not. This is problematic for the family at home and out in the community because she may take food off other people without asking. When Helena takes food from complete strangers, this can create embarrassing and awkward situations for the family. As a result the family may prefer to avoid the possibility of these embarrassing situations occurring and this may reduce the number of opportunities Helena has available to her to participate freely in the community. This is problematic at the respite centre because Helena may take food from other people at the respite centre or out in the community. This is particularly problematic when Helena takes food from people who may not be able to communicate verbally and are not able to communicate to staff that their food was stolen, leading to a reduction in their food intake. In addition, Helena may approach food while it is still cooking and there is the potential that she may burn herself in an attempt to take an item of food from the stove or oven while it is still hot. As Table 5 shows, Helena's food stealing occurs more frequently when food is left unattended and is within her reach.

Table 6 *Observations of Food Stealing over Two Days at the Respite Centre during the Functional Assessment.*

Day One: Afternoon and Evening		
<u>Stimuli/Antecedents</u>	<u>Response/Behaviour</u>	<u>Reinforcement/Consequences</u>
Helena arrived at the respite centre from work placement. She was alone in the lounge and dining area and there was an apple on the kitchen bench.	Picked up and ate the apple	Staff were unaware she had taken the apple and continued to prepare afternoon tea.

Day One: Afternoon and Evening

<u>Stimuli/Antecedents</u>	<u>Response/Behaviour</u>	<u>Reinforcement/Consequences</u>
Staff member was dishing up dinner and Helena was on the other side of the bench watching. The staff turned away from the bench.	Helena reached over the bench and took some food from one of the plates.	Staff physically escorted her to the table and asked her to please sit and wait for dinner.
Staff were busy feeding Ron on his right side. Helena walked over to the left side of Ron.	Helena took food from Ron's plate.	Staff continued to feed Ron and ignored Helena.
Helena returned to the left side of Ron.	Helena took food from Ron's plate.	Staff grabbed the plate and took it into the kitchen.
Staff were in the kitchen, Helena was alone with Ron in the dining room. There was some food from Ron's plate on the table.	Helena took the leftover food from the table and ate it.	Staff ignore Helena and bring back a plate of food for Ron.
Helena is eating a plate of dessert at the table. Staff walk away to attend to Adriana. Helena walks into the kitchen.	Grabs a bread bag, empties the bag onto the bench and eats the bread.	Staff take the bag off Helena and allowed her to keep the bread. Staff physically redirected her to the table to eat her dessert.

Day Two: Afternoon and Evening

<u>Stimuli/Antecedents</u>	<u>Response/Behaviour</u>	<u>Reinforcement/Consequences</u>
Helena had finished her afternoon tea. Staff had placed a cup of milk for Hans on the dining table and then walked back into the kitchen.	Helena picked up and drank the cup of milk.	Staff immediately came back to the dining table and stood in front of Helena who then gave the cup back to staff when she had swallowed her mouthful. The staff took the cup back into the kitchen.

Problem Behaviour Two: The second behaviour that the family and respite staff found to be problematic included pica. At home, Helena's pica included the attempted ingestion of soil, flowers, leaves and pebbles or small stones. When Helena was at home, her family members normally intervened and took the item out of Helena's hands before she had a chance to place the non-edible item into her mouth. At the respite centre she has often successfully ingested some of the pica items (i.e., chewing and swallowing leaves and

flowers). As Table 6 shows, Helena's pica occurs when she is outside. Normally pica occurs in the afternoon before dinner time, though it may also occur before or after an afternoon snack.

Table 7 *Observations of Pica over Two Days at the Respite Centre during the Functional Assessment*

Day One: Afternoon and Evening		
<u>Stimuli/Antecedents</u>	<u>Response/Behaviour</u>	<u>Reinforcement/Consequences</u>
Helena arrived at the respite centre from work placement and ate chopped up pieces of fruit given to her by a respite staff member. The front door was open and Helena ran out the front door to the van. The van was locked so she walked around the garden with a staff member.	Helena picked up a rose and attempted to put it in her mouth.	The staff member took the rose off her saying "no".
Helena continued to walk around the garden with the staff member.	Helena picked up a stone from a different garden bed.	The staff removed the stone from her hand saying "no" and escorted her away from the garden beds holding her by the arm.
Day Two: Afternoon and Evening		
<u>Stimuli/Antecedents</u>	<u>Response/Behaviour</u>	<u>Reinforcement/Consequences</u>
Helena had finished work placement and was walking to the respite centre van.	Helena picked and ate flowers from a bush.	The staff member took the flowers from her mouth and hands and escorted her to the van by holding her arm.
Helena arrived at the respite centre. The staff were supporting other clients and Helena was alone. Helena walked out onto the patio. Staff were attending to other clients. Helena was outside on the patio eating leaves and flowers from the grape vine.	Helena took leaves and flowers from a grape vine and ate them.	Staff unaware that Helena had eaten the leaves and flowers and she remained on the patio outside.
	Helena pulled her pants down while she was on the patio.	Staff pulled her pants up, took some grapes off the vine, offered them to Helena before escorting her in the house.

Formulation of Hypotheses

The problem behaviours were discussed and hypotheses for each were considered. The hypothesis for Helena's food stealing behaviour is that she stole food because (1) she may have been hungry or (2) was experiencing low oral stimulation. The hypothesis for Helena's pica behaviours is that she places inedible items in her mouth because (1) she may be hungry or (2) is experiencing low oral stimulation. The hypothesised functions of Helena's food stealing and pica behaviours may be respondent class behaviours.

Table 8 *Formulation of Hypotheses for Pica as a Respondent Class Behaviour.*

Pica	Respondent Behaviour Class		
<u>Hypothesis</u>	<u>Stimulus</u>	<u>Response</u>	<u>Stimulus Change</u>
1	Hunger (Internal state)	Eat what is nearest (Food or non-food)	Sensory stimulation increased; feelings of hunger reduced.
2	Low oral stimulation (Internal state)	Eat what is nearest (food or non-food)	

Helena currently does not have a reliable communication system in place to enable her to communicate her needs. Therefore, Helena may steal food because she has limited means of engaging in reciprocal communication and is unable to make choices and relay information to others who can help her to satisfy her needs. For example, staff are not able to ask Helena what she would like for afternoon tea as Helena does not have the communication system in place to be able to respond appropriately. This means that Helena can only access food that is offered to her or is visible at the time. As a result, Helena may not be able to distinguish when it is appropriate to take food and when it is inappropriate to take food (i.e., taking food without asking). Therefore, Helena may have been hungry or seeking stimulation and as a result engaged in food stealing to satisfy her hunger or desire for stimulation.

In support of the hypothesis that Helena engages in food stealing to satisfy hunger, long-term use of sodium valproate medications (i.e., from childhood to adulthood) has been associated with weight gain and an increased appetite in adolescents and young adults (Kanemura, Sano, Maeda, Sugita & Aihara, 2012). Sodium valproate use has been shown to contribute to hyperinsulinemia, which reduces the ability to metabolise insulin. Thus individuals, particularly females who take sodium valproate are more susceptible to weight gain as a result of an increased appetite and insulin resistance (Kanemura et al, 2012). As a result, people who take sodium valproate may engage in food seeking behaviours more frequently as a natural response to an increased appetite. Food stealing behaviours may develop from food seeking behaviours in people with limited verbal communication as they lack the skills to effectively communicate their needs. As a result, people with limited verbal communication skills with an increased appetite may steal food. Therefore, side effects from long-term use of sodium valproate medication may contribute to Helena's motivation to seek food and food stealing behaviours are a function driven by hunger or an increased appetite. Therefore, people who have limited means of communicating their desire for food (e.g., non-verbal) may engage in problem behaviours (e.g., stealing food) as they have not learned appropriate ways to achieve the outcome they desire (e.g., obtaining food).

In consideration of replacement behaviours for pica and food-stealing, it was noted that would occasionally point to her chest if she saw an item of food that she wanted and the item of food was not within her reach. At present this is the only way she engages in reciprocal communication. Though, she is not always consistent with this approach to communicate. The gestured attempt to communicate her desires is considered to be a positive behaviour that has the potential to be adapted into a functional method of communicating. In addition, this method of communication is favourable as her family speak a different language than the language spoken at her workplace and at the respite centre. Therefore, it

may be more important for Helena to build on an existing gesture that has the capability to be interpreted universally.

The majority of studies that aimed to identify the function of pica in individuals with intellectual disabilities found that individuals tended to engage in pica for automatic or sensory reinforcement (Hagopian, Rooker & Rolider, 2011). The functional assessment with Helena concluded that Helena's pica behaviours may be classed as respondent behaviours and have occurred because Helena felt hungry and sought food or Helena was not stimulated and sought sensory reinforcement. Therefore the types of interventions that were sought included those interventions that satisfied either sensory needs, relieved feelings of hunger or both. Alternatively, pica may be conditioned from respondent behaviour to operant behaviours.

Table 9 *Formulation of Hypotheses for Pica as an Operant Class Behaviour*

Pica		Operant Behaviour Class	
<u>Hypothesis</u>	<u>Stimuli/ Antecedents</u>	<u>Response/ Behaviour</u>	<u>Reinforcement/ Consequences</u>
1	Staff around Outside "Snack time but no food available" Hunger (Internal state) &/or Low oral stimulation (Internal state)	Puts non-food item in mouth, or attempts to do so	Attention from staff, non-food items removed from mouth, later food is given (afternoon tea); sensory reinforcement from object in mouth

Reviewing the Literature

Food Stealing

The first problem behaviour identified was food stealing. Potential interventions for food stealing were identified by searching the research literature. Several factors were

considered throughout the selection of interventions for food stealing. The factors considered during the selection of interventions included a) interventions that increased the capacity for learning positive behaviours, b) interventions that reduced target problem behaviours, c) the suitability of the intervention to be implemented by staff with basic training and d) whether the intervention builds on the participants existing strengths or skills.

The function of food-related problem behaviours is still largely unknown and under-researched (Fodstad & Matson, 2008; Matson, Fodstad & Boisjoli, 2008). Feeding problems may contribute to challenging behaviours in people with intellectual disabilities (Matson et al., 2008). People with multiple disabilities (e.g., intellectual disability and autism) have been shown to exhibit more problem behaviours during meal times and are more selective with their food choices than individuals with an intellectual disability alone (Fodstad & Matson, 2008). Feeding problems and food-related challenging behaviours (e.g., food stealing) affect approximately 80 percent of people with severe or profound intellectual and multiple disabilities (Perske, Clifton, McClean & Stein, 1977 as cited in Matson et al., 2008). Some of the feeding problems and challenging behaviours that commonly occur in people with intellectual disabilities include food stealing, selective eating, difficulty eating independently and eating inedible objects (i.e., pica) (Matson et al., 2008). Matson, Mayville, Kuhn, Sturmey, Laud and Cooper (2005) conducted an assessment using the Questions about Behavioural Function (QABF) to determine the functions of food-related problem behaviours in people with intellectual disabilities. Matson and colleagues (2005) found that the most common function of food stealing behaviour was to satisfy tangible needs or to provide self-stimulation. The other measures that were identified as unlikely functions of food stealing behaviour included stealing food to escape consequences, gain attention or to reduce physical pain or illness. This means that individuals were more motivated to engage in food stealing

because they wanted to gain access to tangible objects or they were seeking sensory stimulation (Matson et al., 2005).

Typically developing children may display selective behaviours in relation to food (Cermak, Curtin & Bandini, 2010). However, children with autism spectrum disorders can often be described as picky eaters and their eating behaviours can be more restrictive (e.g., limited to five foods) and continue beyond early childhood (Cermak et al., 2010). Selective eating is particularly concerning because of the potential nutritional deficiencies that can occur as a result of a highly restrictive diet. Though, children's personal preferences in the selection of food has made it difficult to draw conclusions about whether there is a general trend in nutritional deficiencies among people with autism. However, associations have been drawn between nutritional deficiencies in iron and pica or the ingestion of non-nutritive substances (e.g., ice cubes) (Delaney, Eddy, Hartmann, Becker, Murray & Thomas, 2014). Other possible reasons for selective eating in children with autism could include sensory sensitivity (Cermak et al., 2010). Children with autism may experience sensory sensitivity in the form of over reactions to sensory stimulation or under reactions (also known as sensory overresponsivity or sensory defensiveness) and this sensitivity may contribute to the types of foods children with autism find appealing (Cermak et al., 2010). However, sensory sensitivity has been described as changeable and people with autism may experience dramatic shifts in their experiences of sensory sensitivity (Hodgetts & Hodgetts, 2007). For example, a child may seek out or enjoy a certain level of sensory input one day (e.g., massage) and then feel repulsed by the same level of sensory input the next day. In relation to food, children with autism appear to be particularly sensitive to the texture and consistency of food and this has been reported as one of the main underlying contributing factors for picky eating in children with autism (Cermak et al., 2010).

The study by Schmidt, Drasgow, Halle, Martin and Bliss (2014) implemented Functional communication training (FCT) to reduce food stealing and aggression in three young people with an intellectual disability and autism aged between nine and 15 years old. Of particular interest were two of the three participants in the study who engaged in food stealing behaviours. Food stealing was defined as taking food without asking for permission first. The study was conducted at the participant's school. The participants attended a special school for young people with developmental disabilities and challenging behaviour. The classrooms were comprised of four students and one behaviour staff member, with a total of eight classrooms within the school. All of the assessments and treatments were conducted at the school during classroom hours and the effects of the intervention were monitored using a multiple baseline design across participants.

The first phase of the study involved determining the function of the participant's problem behaviours. Schmidt and colleagues (2014) conducted a functional behaviour assessment to help determine the function of the food stealing behaviour and help guide the design of the conditions in the discrete trial functional analyses. The functional assessment included a review of the participant's psychological and behavioural records, administration of the Functional Analysis Screening Tool and Motivational Assessment Scale with the participant's behaviour staff members and five hours direct observation of the participant across various settings during school hours (e.g., classroom, lunchroom, play ground) using an A-B-C recording sheet. The findings from the functional assessment, particularly the direct observations, helped to refine the hypotheses for the function of the participant's problem behaviours and aid with the design of the conditions to be implemented in the discrete-trial functional analysis. The findings from the functional assessment showed that the function that food stealing served for the two participants who engaged in food stealing

behaviours was likely to be for tangible reasons (e.g., sensory stimulation) or to satisfy hunger.

Schmidt and colleagues (2014) conducted discrete-trial functional analyses with each participant. The conditions were constructed based on their hypothesised function as identified in the functional assessment. Some of the conditions that were assessed included escape from task demands, increased attention from staff and access to tangible-edibles. Tangible-edible conditions were implemented with the two participants who engaged in food stealing behaviours, Ivan and Thomas. Sessions in the tangible-edible condition were conducted in accordance with the typical classroom schedule for snack time (i.e., one session in the morning and one session in the afternoon). Sessions consisted of an assessment trial and a reinforcer trial. Assessment trials were implemented to assess the participant's level of motivation to engage in problem behaviour when the hypothesised antecedent was introduced (i.e., food was in sight but out of reach). Reinforcer trials were implemented to assess the participant's motivation to engage in the problem behaviour in the absence of consequences (i.e., food was available continuously). Ten sessions were implemented within each condition of the discrete-trial functional analyses.

The assessment trial of the tangible-edible condition involved the staff putting a small amount of food on a table within the participant's view but out of their reach for up to one minute (Schmidt et al., 2014). The assessment trial ended and the reinforcer trial began when the participant either (a) engaged in problem behaviour (i.e., food stealing), (b) used an appropriate communicative response (e.g., "food please") or (c) time expired (i.e., one minute). During the reinforcer trial, the staff ignored all instances of problem behaviour and allowed the participant to have non-contingent access to the food for one minute. In addition, a control condition was implemented with each participant. The control condition was identical to the reinforcer trial which included non contingent access to the reinforcer (i.e.,

food) for one minute. The results showed that both participants engaged in food stealing behaviour 100 percent of the time during the assessment trials. In comparison, the reinforcer trials showed that food stealing behaviour had decreased to 10 percent and 70 percent for Ivan and Thomas, respectively. These findings confirmed the author's hypotheses that Ivan and Thomas engaged in food stealing behaviours because they were feeling hungry or wanted sensory stimulation and thus FCT would serve the same function as the problem behaviour.

The purpose of FCT was to teach the participants an alternative way of communicating their desire to eat food and to replace food stealing behaviour (Schmidt et al., 2014). Two of three participants were taught to use American Sign Language to sign "eat" as a replacement response for food stealing behaviours. The sign for "eat" is represented by raising the hand with an open palm and fingers fully extended to the mouth. The two participants, Ivan and Thomas was taught to use the ASL sign for eat, however the authors adapted the communicative sign produced by Thomas at sessions 18 and 24 as he engaged in self-injurious behaviours when trying to produce the ASL sign for eat (i.e., forcefully striking his chin). As a result, the authors adapted the sign twice. The first adaptation included bringing his right palm in make contact with his left fist. However, Thomas was unable to physically form this sign. Therefore the communicative sign was adapted for a second time at session 24 and included tapping both fists together at the centre of his body. The authors recorded problem behaviour and communicative responses on a response-per-opportunity basis. Whenever the antecedent condition was presented to the participant (i.e., food was presented) served as an opportunity for the participant to respond with either a) the problem behaviour, b) the new communicative response independently, c) author-prompted response or d) no targeted response. The author recorded the responses a) problem behaviour, c) author-prompted response and d) no targeted response as incorrect responses, with the correct response being b) the participant used the new communicative response independently.

Schmidt and colleagues (2014) decided to implement FCT with Ivan and Thomas whom both engaged in food stealing behaviours. Baseline sessions consisted of eight to 10 trials throughout the school day with at least 10 minutes between each trial. Baseline sessions occurred over three days for Ivan and over eight days for Thomas. A trial was considered to be any presentation of food during classroom hours. During baseline trials, the staff member placed the food item on the table in view of the participant. The food was left on the table for one minute. If the participant engaged in problem behaviour or signed “eat”, they were given access to the food. If the participant did not respond with any target behaviour after one minute, the food was removed from the table. The results from the baseline sessions showed that both participants engaged in problem behaviour 100% of the time and displayed the new replacement behaviour zero percent of the time.

Intervention trials consisted of eight to 10 trials throughout the day (Schmidt et al., 2014). Trials were continued based on the participant’s current motivation for the reinforcer. For instance, if the participant ate the food when the food was presented to them, the food would still be considered to be highly motivating and the trials would continue. The first session was conducted in the morning between 9:00am and 11:45am and the second session was conducted in the afternoon between 1:00pm and 3:05pm at times when the behaviour was most likely to naturally occur (i.e., during snack times). The intervention sessions occurred over 30 days for Ivan and over 36 days for Thomas. During the intervention sessions, the staff member would follow the same procedure as outlined in the baseline sessions with the addition of teaching the replacement behaviour. The staff member presented the participant with a food item (e.g., cut up apple) on the table and prompted the participant to sign “eat” with varying levels of assistance as required (e.g., modelling the sign for “eat”) to ensure the participant learned to use the sign. If the participant produced variable responses, the staff member ran 10 to 15 consecutive trials within 10 minutes to foster

acquisition of the new replacement behaviour. Initially, the staff member provided prompts to the participant with varying degrees of assistance (e.g., physical, gestural, verbal prompts) on a 0-second time delay and reinforced emission of the target replacement behaviour by providing the participant with the food item on offer. When the participant was able to emit the replacement behaviour across three consecutive trials, the staff member increased the delay between presenting the food and prompting the correct replacement behaviour by two seconds. The aim of the delay in prompts was to give the participant the opportunity to emit the replacement behaviour independently. If the participant engaged in problem behaviour at any time throughout the trials, the reinforcer (i.e., food item) was removed for 15 seconds. The reinforcer (e.g., apple pieces) was then represented to the participant after 15 seconds and the staff member prompted the participant to perform the correct replacement behaviour to gain access to the food item on offer. When participants were able to produce the correct replacement behaviour after three consecutive trials, the participants entered the maintenance phase.

The maintenance phase was conducted over two months for Ivan and over one month for Thomas (Schmidt et al., 2014). During the maintenance phase, the staff members conducted one to two trials three times per week. The trials were identical to the trials conducted during the intervention phase with the two-second delay between prompts from the staff members. The results from the maintenance phase showed that problem behaviour did not occur at all and the replacement behaviour occurred 100 percent of the time during maintenance sessions.

The results of the study by Schmidt and colleagues (2014) showed that the two participants who were taught to sign “eat” as a request for food began to use the sign independently 10% to 30% of the time by the sixth and fifteenth session. The number of days it took each participant to master the use of the ASL sign (i.e., the sign was emitted during at

least 90% of sessions) for “eat” was 22 days and 30 days, respectively (Schmidt et al., 2014). Problem behaviour had reduced to zero for both participants during the maintenance phase. The authors concluded that the participants had successfully learned to sign “eat” to gain access for food instead of stealing and their learned was also generalised to different settings and with different adults. This was concluded because each participant had ten separate opportunities outside of trials to sign “eat” in the presence of food and both participants used the sign with different care providers and in different settings independently.

Application of Schmidt et al. (2014) study to Helena: Helena pointed to food items and then pointed to her chest to indicate she would like to eat a particular item of food when the food item is out of her reach. To enhance Helena’s existing skills would be teaching Helena to use New Zealand sign language (NZSL) to indicate that she is hungry and would like to eat some food. Helena can feed herself using her hands and has demonstrated that she is able to feed herself with her fingers, it can be inferred that she is physically capable of forming the sign for “eat” with her fingers. The finger formation for the sign for “eat” food or kai in NZSL is similar to the physical action involved in bringing a small item up to the lips (NZSL, 2014).

If the use of the NZSL sign by Helena was not successful, the results from the intervention by Schmidt and colleagues (2014) offer another alternative. They showed that one of the participants adapted the newly formed replacement behaviour to engage in self harming behaviour. As a result, Schmidt and colleagues (2014) trialled two alternative signs for “eat” before the participant could successfully use the replacement behaviour without harming themselves. This finding showed that alternatives to the ASL sign for “eat” were able to successfully replace food stealing behaviours. This means that there is a possibility that alternative forms of communication (e.g., picture cards) could be used to help facilitate communication and consequently reduce food stealing behaviour. A reliable form of

communication, such as signing “eat”, would allow a person with multiple disabilities to indicate that they are hungry or would like food. However, a generic sign may not discern what types of food the person would like to obtain. Therefore, the use of picture cards may provide Helena with more choices when communicating her desire to eat food. For example, Helena may be able to provide a staff member with a picture of the exact item she would like to eat (e.g., apple). Helena enjoys looking at pictures, though she has not had any prior training to use pictures to communicate her needs.

Pica

The second problem behaviour identified was pica. Pica is defined as recurrent consumption of non-nutritive, non-food items (e.g., dirt, paper) (American Psychiatric Association, 2013). The first step involved reviewing literature on interventions with successful outcomes for pica. The most common types of treatment options identified to date include non-contingent reinforcement, differential reinforcement, response blocking or interruption, brief contingent holds and response-effort manipulation (Hagopian, Rooker & Rolider, 2011).

A meta-analysis conducted by Hagopian and colleagues (2011) analysed 26 empirically supported treatment studies that showed reductions of 78 percent or higher in pica behaviours displayed by individuals with intellectual disabilities. Twenty-one of the twenty-six studies reviewed in the meta-analysis showed that pica behaviours had reduced by more than 90% of reported baseline levels. From this finding the authors concluded that behavioural interventions are well-established treatments for reducing pica in individuals with intellectual and developmental disabilities. More specifically, the types of behavioural treatments that were considered to be well-established included reinforcement and response-reduction procedures when used in combination and the types of behavioural treatments that were considered to be probably efficacious included reinforcement or response-reduction

procedures when used alone. There were 50 participants included in the meta-analysis in total and the number of participants involved in each single-case study varied between one and four participants. The studies were conducted in numerous environments including hospitals, day treatment centres and community centres and the research designs were all single-case.

Hagopian and colleagues (2011) concluded from the meta-analysis that the most effective methods of reducing pica involved the use of behavioural skills training and the manipulation of environmental antecedents and consequences. Treatments that involve the manipulation of environmental antecedents included non-contingent reinforcement and response-effort manipulation. Treatments that involve the manipulation of environmental consequences included differential reinforcement and response blocking or interruption (Hagopian et al., 2011).

One of the studies included in the meta-analysis by Hagopian and colleagues (2011) was the study by Piazza, Fisher, Hanley, LeBlanc, Worsdell, Lindauer and Keeney (1998). Piazza and colleagues (1998) used function-based interventions to reduce the pica behaviours of three young people with intellectual and multiple disabilities who were aged between four and 17 years old. The pica items typically ingested by the participants in the study included rocks, twigs, paper, clothing and hair. Piazza and colleagues (1998) conducted a functional analysis and then developed an intervention based on the results from the findings in the functional analysis.

Piazza and colleagues (1998) conducted their functional analyses by baiting a room with pica items and then observing each participant individually in the room through a one-way observation mirror. The authors observed participants across four different test conditions and recorded the number of times each participant put an inedible item in their mouth. The pica items that were used to bait the room were considered safe to be mouthed or

ingested. Some of the items used to bait the room included birthday candles, paper, uncooked beans and pasta. Piazza and colleagues (1998) recorded the number of times pica occurred across each different test condition. The four test conditions were social attention, demand, alone and play. An additional test condition, tangible reward, was implemented for one of the participants who had historically received tangible items, specifically coca cola drink, contingent on the occurrence of pica behaviours. The first test condition was the social attention condition. The purpose of the social attention condition was to see whether the occurrences of pica were reinforced by attention. The participant was given a toy to play with and instructed by the therapist to play quietly. The therapist only engaged with the participant in the form of a verbal reprimand (i.e., “don’t do that”) if the participant displayed pica behaviour during the social attention condition. The second test condition was the demand condition. The purpose of the demand condition was to see whether pica was reinforced by escape from task demands. The participant was instructed by the therapist to complete self-care tasks with verbal, gestural and then physical prompts, as required. The demand to engage in the self-care task was removed for 30 seconds if pica occurred (i.e., the participant escaped having to engage in the self-care task). The third test condition was the ‘alone’ condition. The participant was left alone in the room that was baited with pica items considered safe to be consumed or mouthed. The purpose of the ‘alone’ condition was to see whether pica occurred in the absence of social attention or consequences such as escape from a demand. The fourth test condition was the play condition. Each participant was provided with favourite toys. The participant was praised every 30 seconds for the absence of pica for five seconds, and given physical or verbal attention if they approached the observer. No consequences were delivered if the participant engaged in pica behaviour. An addition test condition was conducted with one of the participants to determine whether pica was maintained by tangible reinforcement. This particular participant had a history of receiving

cola from her parents each time she engaged in pica as a method of getting her to expel the pica items (i.e., keys, plastic game pieces, rocks, coins and crayons). During the tangible condition, the participant was given an ounce of cola each time she engaged in pica. The results of the functional analyses showed that the function of the pica behaviour was different for each participant. Pica was maintained by automatic reinforcement for two of the three participants and both automatic reinforcement and social attention for the other participant. Automatic reinforcement was described as the occurrence of pica in the absence of social attention, demands, toy play and access to tangible rewards (e.g., cola drink). The majority of participants engaged in pica more frequently when they were alone and less frequently when they were given tasks or attention from the adult, with the exception of one of the participants whom engaged in pica more frequently during the attention and alone conditions. Therefore the authors concluded that the participants involved in the study engaged in pica behaviour to increase sensory stimulation, particularly oral stimulation.

Considering the results from the functional assessment, the authors formulated the hypothesis that other forms of oral stimulation (e.g., edible food items) could compete with pica behaviours (Piazza et al., 1998). Thus, the next step in the study involved conducting a preference assessment to determine which objects, both food and non-food, provided the highest level of sensory stimulation for the participant based on the level of interaction the participant had with each object. Items were considered to be matched or unmatched to the sensory stimulation that pica produced. For example, matched items included items that the participant could place in their mouth (e.g., food, rubber toys). Unmatched items included items that could provide stimulation to other senses (e.g., auditory, thermal, visual, tactile). For example, items that were considered unmatched to oral stimulation included music, ice packs and a mechanical fan. Participants were presented with 18-20 items that were matched or unmatched with oral stimulation.

The preference assessment was conducted in the same room as the functional assessments and was baited with pica items considered safe to be mouthed (e.g., Velcro strips, paper, uncooked pasta). The participant was offered one of the items from the list of matched or unmatched stimuli for 30 seconds. Interaction with an object occurred if the participant oriented toward the item, used the item for its intended purpose or placed the item in their mouth (edible items only). If the participant placed an inedible item in their mouth during the trial, an occurrence of pica was recorded. Trials consisted of the presentation of an object to the participant and the duration of trials varied with each participant. The trials were 30 seconds in duration for one of the participants and five minutes in duration for the other two participants. Each of the items included on the list of matched and unmatched stimuli were presented to each participant 10 times. Piazza and colleagues (1998) found that incidences of pica were lowest when the participant had access to objects that provided oral stimulation as opposed to objects that provided other forms of stimulation. For example, the presence of food items correlated with lower levels of pica behaviour than the presence of an ice pack or music.

The next phase of the study included additional research into the properties of the matched food items each participant preferred to place in their mouth. A preference assessment was conducted with each participant to determine the number of interactions the participants had with four different categories of food. The different categories of food included (1) firm and unflavoured (breadstick); (2) firm and flavoured (cheese flavoured corn chips); (3) soft and unflavoured (e.g., tofu); and (4) soft and flavoured (e.g., banana). Participants were exposed to one or two food items from each category for 30 seconds at a time. The seven or eight food items were presented five times each and the total number of presentations equalling approximately 40 trials. The participant was seated in a highchair. Piazza and colleagues (1998) presented the participant with two items on the tray in front of

the participant. One of the items included a matched food item (e.g., tofu) from one of the four categories and a baited pica item (e.g., paper). After 30 seconds the items were removed and another trial instigated. Interaction with the food item was recorded if the participant touched the food item or put the food item in their mouth. Pica was recorded if the participant picked up the baited pica item and put the non-food item in their mouth. Piazza and colleagues (1998) found that the participants showed higher levels of pica behaviour when the food items that were paired with baited pica items were softer in texture (e.g., jelly, tofu). In comparison, food items that were firmer in texture (e.g., breadsticks, rice cakes) resulted in fewer incidences of pica behaviour. The flavour of food was shown to have a minimal effect on the rates of pica.

The final phase of the study involved the introduction of response blocking. The observation room was baited with pica items considered safe for mouthing and matched food items (e.g., breadsticks, rice cakes) were available continuously on a tray in the middle of the room. The participant was offered a matched-texture food item every 30 seconds if the participant was not already consuming one of the food items. If the participant attempted to place one of the pica items near or in their mouth, the author removed the non-food item from the participant's grasp and placed it on the floor, that is, the attempt to engage in pica was blocked. Following a response block, the author escorted the participant to a position in the room that was considered to be an equal distance away from the matched items and pica items and a new trial commenced. The combination of matched food items and response blocking reduced the occurrences of pica to less than once per minute. Piazza and colleagues (1998) concluded that texture was an important component in reducing the rates of pica for people who engage in pica for oral stimulation. However, introducing food with matched texture did not result in significant reductions in pica levels until response blocking was introduced. In conclusion, the intervention phase that resulted in the greatest reductions of

pica involved a combination of presenting the participant with food items that matched the texture of pica items and blocking any occurrences of pica by removing the item and redirecting the participant to the food item with matched texture.

A second study included in the meta-analysis by Hagopian and colleagues (2011) was the study by Ricciardi, Luiselli, Terrill and Reardon (2003). Ricciardi and colleagues (2003) used differential reinforcement of alternative behaviour to reduce pica behaviour in a young seven year old male with autism. Some of the pica items the participant preferred to ingest included wood chips, stones, paper, plastic, dirt and tar. The intervention was conducted with the participant at his school, a private school for children with developmental disabilities where the participant was enrolled in a classroom with three other students, one teacher and one teaching assistant. The classroom sessions occurred five days per week and were six hours in duration. The intervention was implemented following an A-B-A-B reversal design.

The first phase of the study included a functional behaviour assessment. Ricciardi and colleagues (2003) conducted a functional behaviour assessment through direct observation of the participant at his school and interviews with the participant's classroom teachers. The results from the functional assessment concluded that the participant engaged in pica when he was alone or interacting with his teachers. In addition, pica behaviour continued whether staff ignored or interrupted the behaviour. As a result, the researchers concluded that the young man was engaging in pica behaviour for automatic reinforcement.

The baseline sessions (Ricciardi et al., 2003) consisted of the participant attending class as normal. Baseline sessions were conducted over 10 days during class time. During baseline sessions, the classroom teachers recorded the number of occurrences or attempts to engage in pica throughout class time. The teacher or teaching assistant would record an attempt to engage in pica or actual pica as a pica occurrence on the data sheet provided by the

authors. During class time, the teachers would interrupt and remove any items used or attempted to be used for pica from the participants hand or mouth. When the teacher had removed the pica item from the participant, the teacher would then redirect the participant back to a task. The number of occurrences of pica ranged from 20 to 41 times per day during baseline sessions.

Alternative response training was implemented on the eleventh school day and was implemented over 12 school days (Ricciardi et al., 2003). When the participant attempted to place an inedible item in their mouth, the teacher would remove the item from the participants hand or mouth and instruct the participant to throw the item into the bin by stating “where does it belong – in the trash”. The participant always complied with the request and thus additional prompting was not required. When the participant had thrown the item in the bin, the teacher encouraged the participant to repeat the response ten more times by pointing out other items in the room that the participant frequently used for pica. While the participant was picking up items and placing them in the bin, the teacher did not speak to the participant. After the participant had completed the task, the teacher redirected the participant back to his task. During the alternative response training the rate of pica had reduced to two to nine incidences per day. After the initial alternative response training a second baseline session was conducted over three days. The incidences of pica had increased to between nine and 17 times per day. Following the second baseline sessions, the alternative response training intervention was reinstated for 23 days. The rate of pica had reduced to between zero and eight each day. At follow up sessions (i.e., once per month, over four months), the occurrences of pica each month was between zero and three.

Ricciardi et al. (2003) concluded that the participant showed a significant reduction in the rate of occurrences of pica following the alternative response training intervention and these findings were maintained four months later following the intervention. In addition, the

parents of the participant reported significant reductions in the rate of pica at home following the skills the participant had learned during the intervention in the school environment. These results are particularly noteworthy provided that the participant had not had any success with a variety of other approaches to reducing pica, including reprimands, response interruption and differential reinforcement of alternative behaviours. The authors stated that alternative response training may have been successful as it characterised a natural corrective action for pica.

Identifying Interventions for Helena

Food Stealing

The two positive behaviour support plans that were developed to reduce food stealing behaviours were based on Schmidt et al. (2014). The first positive behaviour support intervention involved teaching Helena to use NZSL to sign “eat” to indicate that she was hungry and would like to gain access to food. Producing the NZSL sign for “eat” involves bringing all of the fingers on one hand together (as if holding a grape) and bringing the fingers up to the lips. This sign indicates “I would like something to eat”. The second positive behaviour support intervention involved teaching Helena to use a picture card to indicate to staff that Helena is feeling hungry. The picture card is a laminated card with a picture of food with the word ‘food’ underneath. During snack times Helena would be encouraged to use the picture card to indicate to staff that Helena is feeling hungry.

Both proposed interventions were planned to be implemented across two weeks at the respite centre. During Helena’s first visit to the respite centre, staff would implement a 15-trial mass session. During these trials, staff would teach Helena to use the communicative sign “eat” or use her picture card to indicate she would like food and staff would provide food each time Helena produced the signal or card. Sessions occurred at the same time each

day. E.g., the mass sessions could occur at snack times 3:00pm to 4:00pm and 7:30pm (after dinner) every evening during Helena's stay at the respite centre. In the morning, staff would continue to reinforce signing or card use, though the sessions would only occur before breakfast time 7:30-8:00am and might only occur once or twice.

After two weeks of mass training, or after Helena had independently begun to use the sign 'eat' or produce the picture card for 'food', staff would then prompt Helena to use the sign for 'eat' or 'food' two to three times during each stay to ensure she continues to use the replacement behaviour. If Helena used the sign or picture card independently and outside of meal times, staff would provide Helena with an item of food to reinforce the replacement behaviour, and would continue to do this until further notice following a meeting planned to be held with staff and family after the two-week period to discuss a long-term maintenance schedule.

Pica

The first positive behaviour support intervention that was developed to reduce Helena's pica was a form of antecedent manipulation (AM) based on Piazza and colleagues (1998). The main aim of the first intervention was to present Helena with non-contingent access to food items that matched the textures of preferred pica items. The types of non-food items Helena liked to place in her mouth included rocks, leaves and flowers. Food substitutes for non-food items such as rocks may include biscotti, frozen cubes of juice, large coconut chunks, carrots or nuts (almonds, peanuts) while substitutes for leaves could include lettuce leaves or spinach leaves. When Helena engaged with the substitute food items she was provided with positive reinforcement (i.e., descriptive praise such as "well done for eating the <food item>"). Meanwhile, any attempts to engage in pica were blocked by removing the

item from her hand or mouth and saying “this is not food” and redirecting Helena to the substitute food items.

The first intervention was planned to be implemented across two weeks at the respite centre. One session would be implemented in the afternoons during snack time (i.e., 3:00pm-4:00pm when Helena arrived at the respite centre from her work placement) and any attempts to engage in pica outside of the designated time for sessions would initiate the beginning of a new session. For example, engaging in pica at breakfast time or supper time would initiate a new session. After two weeks, staff would assess which items of food were associated with fewer attempts to eat non-edible objects. These items of food may then be presented on the table inside the house at snack times and assessed to see whether the change in placement of the food items will continue to reduce any attempts to eat non-edible objects.

Helena’s second positive behaviour support intervention was based on the study by Ricciardi and colleagues (2003). The main aim of this intervention was to teach Helena to discard non-food items she would normally use for pica behaviour into a rubbish bin. If she picked up a non-edible item, staff would immediately remove the item from her mouth or hand and say “Where does it belong? In the bin” and prompt Helena to place the item in the bin. When Helena puts the item in the bin, staff would praise her and then provide her with a preferred food item. This intervention was planned to be implemented over two weeks at the respite centre. The intervention would be implemented during snack time (i.e., 3:00pm-4:00pm when Helena arrives home from work). If Helena picked up a non-edible item during snack time, 10 massed trials were to be implemented to teach Helena to discard the item. After these massed trials at the beginning of snack time, any time subsequently that she attempted to pick up a non-edible item, one trial of the discard training would occur. After these two weeks, staff would continue to prompt the discard response each time that Helena

spontaneously picked up a non-edible item. Prompting may reduce from hand-over-hand guidance, gesturing, verbal prompts and no prompts.

Intervention Choice and Informed Consent

The two interventions selected for presentation to the family for food stealing included a) teaching Helena to use NZSL to communicate that she would like to eat some food and b) teaching Helena to use picture cards with food items pictured on the cards in exchange for real food when she was hungry. In order to identify the preferred intervention and secure informed consent, the researcher contacted the family to discuss the intervention options identified for food stealing and pica and met with Helena, her sister and her mother at home. The researcher gave them an approved information sheet containing both interventions described in detail (see Appendix H, I) and explained to the family that everything discussed at the meeting would remain confidential. In order to assist the family and Helena in understanding the interventions, social stories (Karayazi, Kohler Evans & Filer, 2014; Kokina & Kern, 2010)¹ were constructed to describe the two types of interventions for food stealing (*Figure 3*). As part of the consent procedure, the stories were related to Helena who then looked at the pictures for several minutes while both the researcher and mother explained the different interventions to Helena and gave her the option to choose an intervention. Helena was very happy, smiling and laughing while the meeting was being held. The interventions were explained to Helena by showing her one social story strip at a time (as outlined by a break between the picture strips in *Figure 3*).

¹ Social stories are used to objectively communicate social information using pictorials and simplistic language, specifically for people with Autism Spectrum Disorders.

Social Stories for Functional Communication Training for Food Stealing

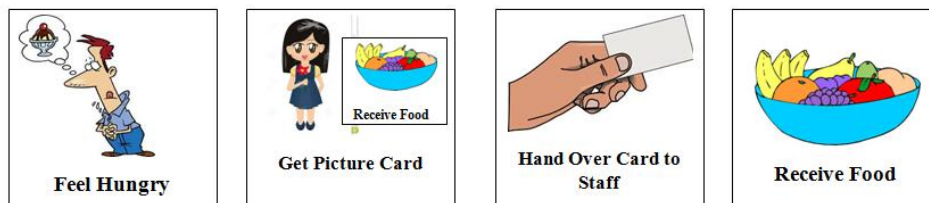
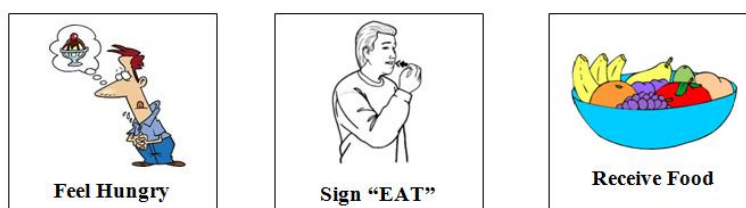


Figure 3. Social Stories of Functional Communication Training for Food Stealing.

Created by researcher, Corrina van Eyk).

The family chose the NZSL intervention for food stealing to be implemented at the respite centre first and decided to keep the picture card intervention as the back-up intervention. They outlined their selection on the assent form (see Appendix L) and gave their consent to the implementation of either intervention.

As it happened, the family were happy with the use of both interventions but particularly liked the idea of Helena learning to use NZSL to communicate when she was feeling hungry because NZSL would be easier to teach Helena, would build on Helena's existing strengths in communication, and is a universal signal to communicate the desire for food. Helena is capable of pointing to an object and then to herself when she sees something she wants. However, Helena does not consistently indicate her needs by using this pointing technique. Therefore, the family were particularly agreeable to Helena learning a universal technique that could be used consistently when she desires food. The family also thought that the picture card intervention was a possibility for reducing Helena's food stealing behaviour. This is because Helena really enjoys looking at pictures. However, Helena has a history of

ripping pieces of paper and enjoys playing with pieces of paper or card (i.e., rolling or ripping paper) rather than just looking at the cards. The family also suggested that Helena may just throw the card away when she is finished looking at the picture. Thus, when she needs to use the card to communicate her desires, she may not be able to find the picture card, therefore, the family thought that Helena may not be as engaged or learn to use the picture cards as quickly as the sign language intervention.

Identification of a preferred intervention for pica and securing informed consent followed the same procedure. Two interventions were designed for the reduction of pica behaviours based on the literature review and the functional analysis of Helena's pica (see Appendix J, K). The interventions for pica included a) replacing pica items for foods with matched textures (Piazza, et al., 1998) and b) teaching Helena to discard pica items in exchange for food (Ricciardi, et al., 2003). Helena was shown social stories to describe the two different interventions for pica, as shown in *Figure 4*.

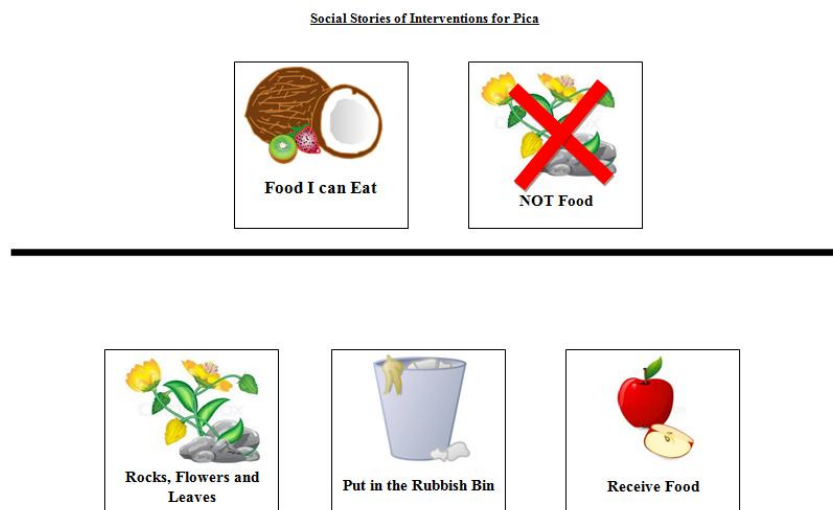


Figure 4. Social Stories of Interventions for Pica. (Created by researcher, Corrina van Eyk).

The family reported that they liked both interventions for pica behaviours but chose the matched texture intervention as the first intervention, decided to keep the discard procedure as a back-up intervention and gave their consent for the interventions to be implemented at the respite centre (see Appendix L). The family found the pica interventions fascinating. They were specifically intrigued to see how Helena would respond to the matched textures intervention. The family had never thought of creating a competing stimulus for pica behaviours and wanted to see how Helena would respond when both items she was presumed to enjoy were present in the same environment. The matched textures intervention was deemed to be more of an experiment and the family were interested in knowing whether Helena engaged in the pica behaviour because she was hungry or if she genuinely enjoyed the tastes of rocks, flowers and leaves. The discard intervention was also considered to be a good idea, although the practicality of implementing the intervention in environments other than directly in the respite centre may be limiting, for example, when Helena is supported to do an activity in the community while she is under care of the respite centre (e.g., swimming), where access to a suitable bin may be restricted. The family still believed that teaching Helena to throw the pica items into a bin may help to reinforce the idea that the items that she normally likes to put in her mouth belong in the bin and are therefore not edible.

Briefing of Respite Care Staff

At the monthly respite staff team meeting, the steps involved in the intervention for pica chosen by Helena and her family were explained and information sheets provided to the seven respite staff and the respite agency manager. It was planned that the pica intervention would be implemented after the food stealing intervention as the skills Helena would learn from the food stealing intervention may potentially be useful to have throughout the pica

intervention. All of the staff agreed with the content of the interventions and were willing to participate by signing the consent form (see Appendix M).

The main concerns raised by some of the staff members included the duration of the intervention and how much preparation would be required prior to each session of the intervention. The staff were reassured that the intervention would initially be implemented over two weeks and then a discussion would be held with the staff and family to discuss the outcomes of the brief intervention and whether the intervention should be continued, altered or faded. The staff members were agreeable to the time frame of the intervention and thought it would be easy enough to implement. The staff members discussed ways they could support each other to reduce some of the effort required to carry out the pica intervention. The staff decided that morning staff could prepare Helena's afternoon meals in the morning (i.e., chopping up pieces of apple) to reduce some of the workload in the afternoon. All staff members were satisfied with this solution. The researcher discussed the intervention and answered the questions of staff for over 20 minutes.

Results of the Positive Behaviour Support Plans

Staff recorded instances of food stealing and pica on a data recording sheet (see Appendix N) during baseline, intervention and follow-up sessions. The interventions for food stealing and pica were staggered by two weeks. Baseline data for food stealing was collected over two weeks and pica, four weeks. FCT for food stealing was implemented alone for two weeks, before AM for pica was implemented. FCT continued for another two weeks in accordance with AM before FCT and AM entered the maintenance phase. After one month of the maintenance phase, staff recorded instances of food stealing, pica and independent use of NZSL for two weeks. Due to Helena's absence during one week of follow-up, a third week of follow-up data was obtained. Results are reported in *Figure 5* and *Figure 6*.

Functional Communication Training for Food Stealing and Antecedent Manipulation for Pica

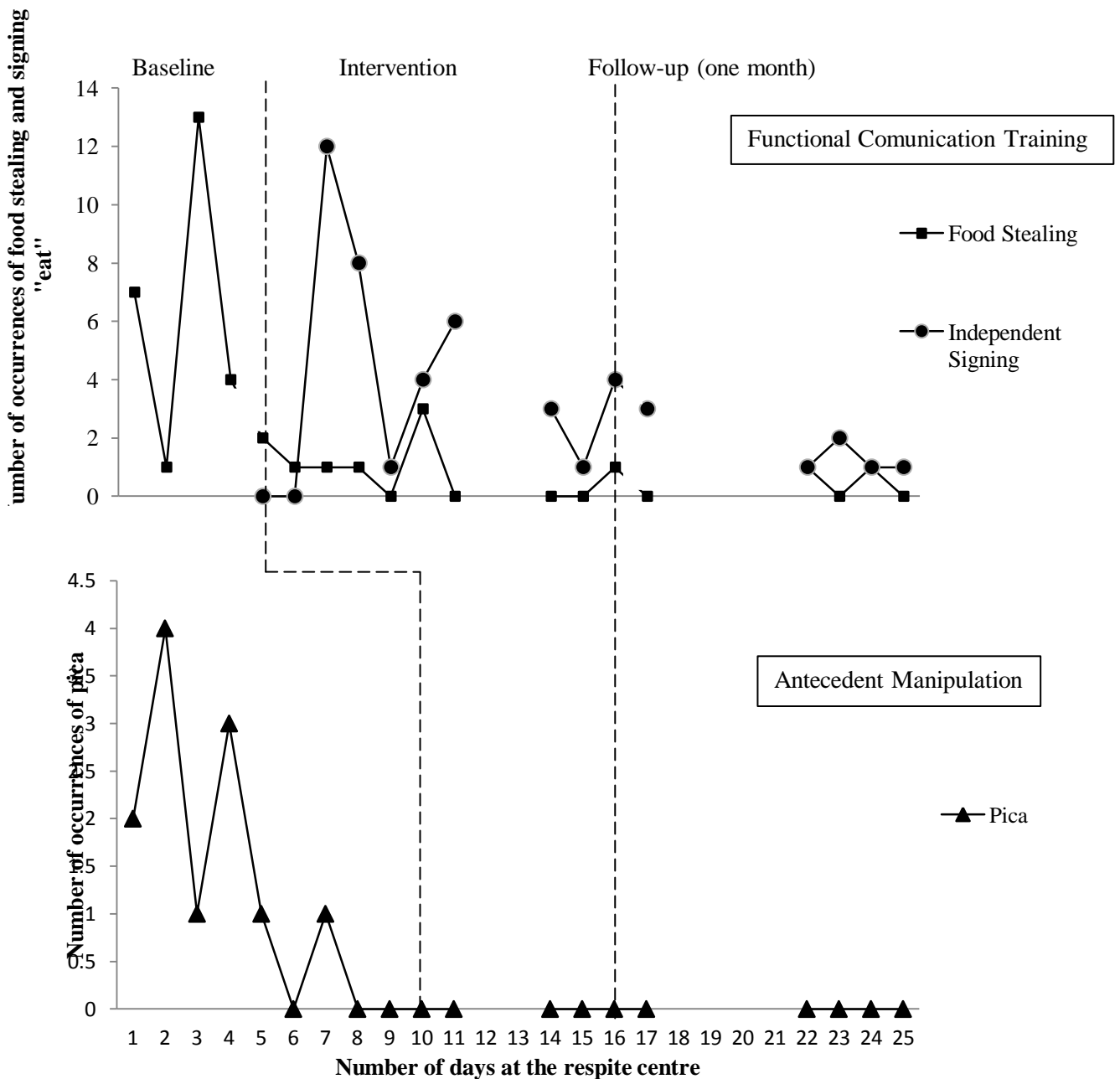


Figure 5. Functional Communication Training for Food Stealing and Antecedent Manipulation for Pica. Multiple baseline graph depicting results of the interventions across food stealing and pica behaviours. Gaps in the graph represent absences from the respite centre (i.e., days 18 – 21) or no data recorded (i.e., days 12 and 13).

Teaching Functional Communication Training

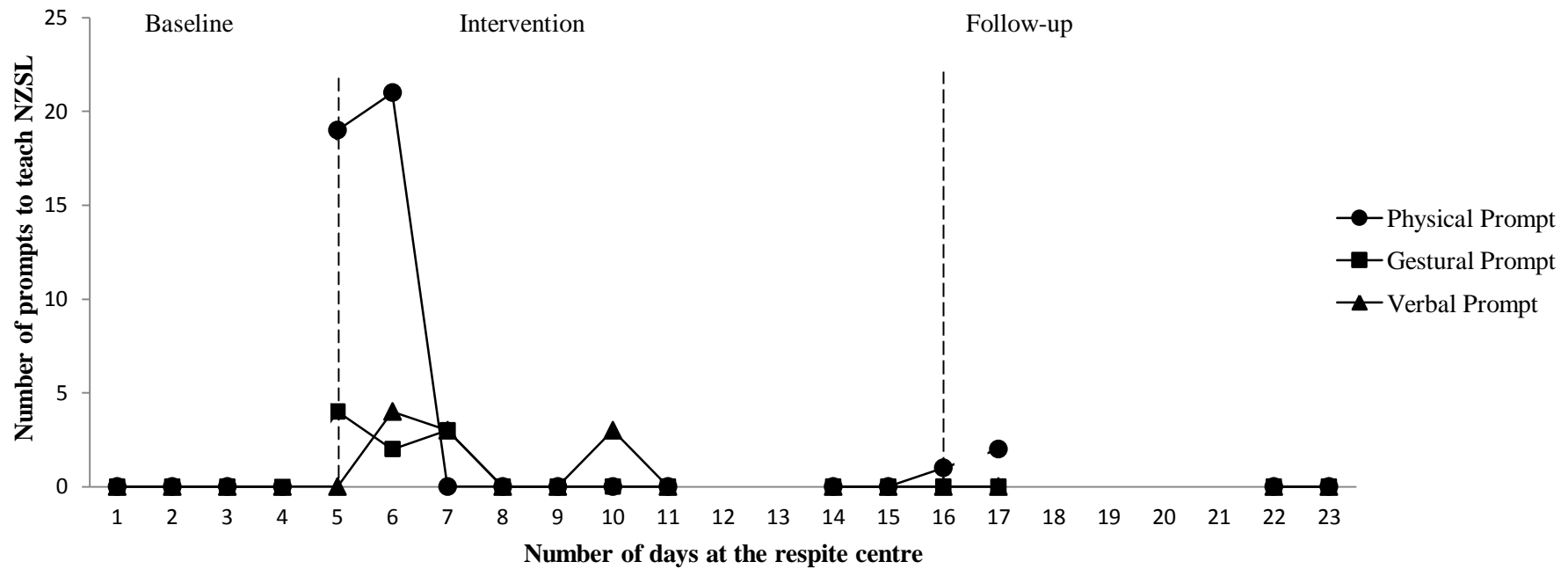


Figure 6. Teaching Functional Communication Training. Staff members provided assistance to Helena during the acquisition of Functional Communication Training for Food Stealing in the form of physical, gestural and verbal prompts when she did not produce the correct sign or when no sign was produced at all.

The results of FCT and AM showed that food stealing and pica was variable throughout the study. Instances of food stealing ranged between one and 13 during baseline and had reduced to between zero and three times per day during the intervention, showing a reducing trend for food stealing. During FCT, Helena used an existing form of functional communication independently by pointing to her chest occasionally when she wanted to obtain food or drink. When Helena displayed this behaviour, staff physically, gesturally or verbally prompted her to perform the alternative NZSL sign. When Helena pointed to her throat, chin or lips this was recorded as independent signing. Any attempts to communicate by pointing to her chest were corrected by staff who then prompted the alternative NZSL sign and the type of prompt provided by staff was recorded, as can be seen in *Figure 6*.

During the food stealing intervention, independent emissions of functional communication occurred between zero and 12 times per day. However, during the follow up phase, the rate of independent emissions of functional communication decreased to one to two occurrences per day. It is hypothesised that independent signing may have decreased as a result of the AM intervention, where food was available non-contingently for periods throughout the day.

AM for pica was introduced after two weeks of FCT for food stealing. Pica was variable throughout baseline, occurring between zero to four times per day and there was a reducing trend for pica after FCT was introduced. During FCT for food stealing, pica had reduced to near zero and remained at zero throughout the remainder of the study, which suggested that there were some general effects from FCT.

Maintenance: As promised, following the intervention phase, a meeting was held with Helena's family members, the respite staff and the researcher to discuss the interventions and evaluate any notable changes to Helena's problem and positive behaviours. Everyone at the

meeting agreed that the interventions were having a positive effect on Helena's behaviours. The frequency of Helena's food stealing and pica behaviours had decreased and she was using functional communication skills more frequently as a result of the intervention. The respite staff added that Helena was having difficulties producing the NZSL sign for "eat", though she engaged in food stealing behaviours much less frequently.

Helena would alternate between pointing to her chest, neck, throat or lips when she wanted to ask for food. As a result, the respite staff spontaneously decided to implement games with Helena to attempt to teach her the difference between her nose, mouth and throat as a method of attempting to get her to use the NZSL sign for "eat" (i.e., pointing to the mouth). At the conclusion of the meeting, it was decided by the respite staff and Helena's family to continue implementing the intervention during her visits to the respite centre. The duration of the meeting was 20 minutes.

Social Validity

At the end of the study, the researcher gave the staff members who participated in the study and the parents of the participant the Abbreviated Acceptability Rating Profile (AARP) (Tarnowski & Simonian, 1992) to assess the social validity of the intervention. The results of the social validity questionnaire showed that the parents of the participant and the respite staff members believed that the interventions were an acceptable way of managing Helena's problem behaviours and that the interventions were effective in treating Helena's problem behaviours. Scores on the AARP (Tarnowski & Simonian, 1992) range from 1 to 5 (1 = strongly disagree, 3 = neither agree nor disagree and 5 = strongly agree). The scores reported in Table 9 have been averaged across each of the respite staff and parents who participated in the AARP.

Table 10 *Abbreviated Acceptability Rating Profile Scores.*

Social Validity Questionnaire	Score
1. These interventions were an acceptable way of managing the young adult's behaviour	4.5
2. These treatments have been effective in treating the young adult's behaviour	4.0
3. I would be willing to use these treatment approaches with another young adult	4.0
4. These treatments would not have bad side effects for the young adult	4.5
5. I liked these treatment approaches	4.5
6. The treatments were a good way of handling the young adult's problem behaviour	4.5
7. Overall the treatments have helped the young adult	4.5

CHAPTER FIVE

DISCUSSION

The present study aimed to evaluate the effectiveness of a brief functional behavioural assessment in the development of self-determined positive behaviour support plans to reduce identified problem behaviours of Helena with multiple disabilities. The results of the behavioural functional assessment indicated that the reason for Helena's food stealing and pica was her internal state, given that her food stealing and pica occurred more frequently prior to or in between meal times which suggested hunger. In addition, long-term use of sodium valproate (i.e., medication for epilepsy) has been associated with increased appetite in adolescents and young adults (Kanemura et al, 2012), and Helena had been taking sodium valproate for 26 years. It was hypothesised that a successful intervention would need to incorporate functional skills training and antecedent manipulation to enhance her ability to request food to reduce hunger. As Helena had acquired a gesture that was used, but very infrequently to request food, it was determined to target this existing response in the intervention plan. The results of the positive behaviour support interventions demonstrated that the acquisition of functional communication resulted in a reduction of multiple problem behaviours, specifically, food stealing and pica. Helena was able to acquire a functional communication skill, specifically the ability to communicate that she wanted to "eat" in NZSL, in less than two weeks and to maintain this skill one month later.

The Functional Assessment Screening Tool (Iwata et al., 2013) in combination with direct observation was an effective method of accurately identifying the function of Helena's food stealing and pica, without resorting to experimental methods that involve actual manipulation of consequences and/or antecedents (e.g., Stokes & Luiselli, 2009). The rationale for conducting analogue functional analyses is to increase confidence that the

identified functions of behaviour are valid and reliable (Dixon et al., 2012) and Beavers and colleagues (2013) reported that the majority of studies conducted with individuals with intellectual disabilities and problem behaviours showed a preference for using direct analogue functional analyses to identify the functions of behaviour, in comparison to indirect assessment. In addition, Schmidt and colleagues (2013) also concluded that analogue functional analysis was an effective approach to identification of the function of each participant's problem behaviour. However, given that the most common forms of problem behaviour observed in people with multiple disabilities are aggression and self-injury (Smith & Matson, 2010), setting up assessments that require some of the behaviour to occur is in some degree dangerous, and therefore ethically questionable. Indirect methods may, therefore be preferable, even if less reliable. The Functional Assessment Screening Tool (Iwata et al., 2013) is considered to be a valid and reliable screening tool when used with multiple informants and produces results consistent with findings obtained from a functional analysis. The good outcomes associated with appropriate function-based interventions with Helena may support the use of indirect methods of functional assessment for other individuals who attend respite settings.

Helena's acquisition of the New Zealand sign for "eat" occurred in approximately two weeks or four nights at the respite centre which represents acquisition in significantly fewer sessions than reported by Schmidt and colleagues (2013), which required 22 – 30 days. Helena was able to produce a variation of the NZSL for "eat" (i.e., pointing to her lips, chin or throat) after the third day of FCT training (i.e., day one, week two) or after approximately eight hours of FCT training. The rapid acquisition of NZSL was unexpected particularly because of the transient and diverse nature of the respite environment and Helena's past learning history. For example, Helena had never been successfully taught sign language or functional communication skills previously. However, the literature on acquisition of

replacement behaviours and FCT suggests that shaping and reinforcing existing behaviour may be an efficient method of reducing problem behaviour (Umbreit et al., 2007) and this proved to be the case in the present study.

Helena spent two nights per week at the respite centre and the rest of her time in other environments such as home or at work placement. Each person who attends the respite centre has been allocated a maximum number of nights they can avail themselves of respite care. The respite environment is transient because of the limited time each individual spends at the centre. To accommodate the stays of other respite users and in fairness to other families who may desire weekend respite, visits are often brief and are rotated (e.g., three nights at the respite centre, five nights at home). As a result, people who attend respite will likely be mixed with a different group of people every day, which contributes to the diversity of the respite centre. The staff at the respite centre work shifts based on a roster-system that may vary according to their availability for work (e.g., part-time, full-time). Staff hours are rotated to ensure that each staff member has the option to have a weekend off work (e.g., four days of work and then two days off work). As a result, the staff and the respite service users each have individualised rosters that are rotated according to their needs. Overall, this means that each day at the respite centre there may be a change in the staff or the group of people who attend, which contributes to the transient and diverse nature of the respite centre. The results of this study showed that Helena's existing skills were able to be shaped and maintained in a diverse and transient respite care setting. The majority of other studies reviewed in chapter two demonstrated the effect of interventions within settings that were more consistent (e.g., same people implementing the intervention or same peers or group dynamics). Thus, Helena's acquisition of the NZSL sign for food in a respite care setting may highlight the importance of the types of reinforcement used for learning and fast acquisition.

Helena's acquisition of NZSL also quickly reduced occurrences of food stealing and pica which had been reinforced and maintained for more than two years. Kurtz and colleagues (2011) reviewed interventions for problem behaviours with individuals with disabilities and found that FCT was a well-established treatment for children and probably efficacious with adults. The present study demonstrates an effective intervention with an adult. Although Helena's acquisition of NZSL with FCT was successful, more opportunities to learn functional communication during childhood may have prevented some of Helena's problem behaviours. In particular, adults with problem behaviours may experience greater difficulties learning new replacement behaviours in adulthood when problem behaviours are likely to have been long-standing and embedded over longer periods of time than if problem behaviours are intercepted during childhood, where they may not have been reinforced and shaped for as long.

The acquisition of NZSL may have occurred more rapidly in this study because the intervention was likely shaping and reinforcing an existing communicative skill that Helena possessed (i.e., pointing to her chest occasionally) and also because the consequence was a primary reinforcer. The communicative function of pointing was able to be shaped into universal NZSL for requesting food or to "eat". The function of Helena's behaviour was to reduce hunger and a powerful reinforcer for Helena's food stealing and pica, and a natural consequence of the communicative response (i.e., NZSL sign for "eat"), was to gain access to food. Replacement behaviour can consist of new behaviour that is taught or behaviour already within the individual's repertoire that is reinforced (Umbreit et al., 2007), however, the acquisition of new behaviours or skills requires more intensive and frequent reinforcement than behaviour that already exists within an individual's repertoire (Umbreit et al., 2007). According to the literature, two methods involved in teaching replacement behaviours included providing alternatives and adjusting contingencies (Umbreit et al.,

2007). In the present case, when Helena was hungry she reverted to behaviour that reduced hunger, namely food stealing and pica. Introducing FCT provided Helena with an alternative and more efficient method of gaining access to food and the contingencies for engaging in functional communication resulted in positive outcomes for Helena (i.e., praise for using NZSL and access to food) rather than previous contingencies for food stealing behaviour (i.e., removing food or non-food items from grasp). Several studies that have implemented FCT with individuals with multiple disabilities have shown successful reductions in problem behaviour (Bloom et al., 2013; Davis et al., 2012; McClean et al., 2007; O'Reilly et al., 2012; Robertson et al., 2013; Sigafos et al., 2008; Stokes & Luiselli, 2009). For some individuals, the presence and consistency of reinforcement of an alternative positive behaviour (e.g., functional communication) resulted in reductions in the problem behaviour as the new skill was a more efficient method of communicating than engaging in the problem behaviour (e.g., saying "no" or throwing a tantrum) (Robertson et al., 2013). Thus, simply providing individuals with alternatives to communicate the same function may be an effective method of shaping existing or teaching new replacement behaviours when the reinforcement schedule is also changed and when praise is added to the consequences. In addition, the approximately eight hours of FCT that led to Helena's acquisition of NZSL may suggest that natural consequences, such as providing food to Helena as a consequence for signing 'eat', provide powerful reinforcement when teaching replacement behaviours that serve the same function as problem behaviour.

The relative simplicity of the topography of Helena's behaviour to access food (i.e., food stealing and pica) may have influenced the speed of her acquisition of NZSL. Other problem behaviours that serve a different function, for example gaining attention, may have more complex topographies (e.g., swearing, aggression) that would require more effort to prevent or redirect than problem behaviours with simpler topographies. As a result, the

topography of problem behaviour could prolong the acquisition of replacement behaviours (Schmidt et al., 2013). For example, the reduction in the complex behaviour of rectal picking, maintained by attention, sensory stimulation and escape, as reported by Stokes and Luiselli (2009) took more than five weeks to eliminate rectal picking. In addition, topographies that serve the function of gaining attention may be harder to prevent or redirect without inadvertently reinforcing the behaviour by providing attention (e.g., reprimanding cursing or sexualised statements; Schmidt et al., 2013). Therefore problem behaviours (e.g., swearing) with complex topographies may reduce the speed and potentially the success of acquisition of replacement behaviours.

Helena's pica had reduced to near zero during functional communication training for food stealing and remained at zero during an antecedent manipulation for pica behaviour. Piazza and colleagues (1998) reported that the pica behaviour of two of their study participants had reduced to zero immediately on implementation of an antecedent manipulation where matched and unmatched stimuli were available in their environment. In comparison, the third participant in their study experienced reductions in pica behaviour to near zero levels only when the availability of matched stimuli was introduced in combination with response blocking, though these effects were also immediate on implementation of the combination of conditions (Piazza et al., 1998). The literature states that the most effective methods of pica reduction have included behavioural skills training and the manipulation of environmental antecedents and consequences (Hagopian et al., 2011). The behavioural skills training that occurred during the intervention for food stealing in the present study may have influenced pica behaviour and the introduction of antecedent manipulation may have further compounded the effects of the first intervention on pica behaviours. This finding supports the idea that behavioural skills training in combination with environmental manipulation may be an effective method of reducing pica behaviours (Hagopian et al., 2011). In addition, the

availability of foods with matched texture to pica items during times of peak hunger (e.g., afternoon) may provide an explanation for the reduction of independent requests for food observed during antecedent manipulation for pica and throughout the remainder of the study.

Helena's food stealing and pica limited her opportunities to participate freely in the community. Helena's family and the respite staff expressed difficulties taking Helena into the community because she needed constant supervision to ensure she was not stealing food from members of the public or ingesting non-food items that were potentially dangerous. As a result, Helena may have experienced fewer opportunities for social skill development than other young adults because it has been easier for family members and staff to keep Helena at home where they are better equipped to monitor and handle any instances of food stealing and pica than when in the community. According to the literature, it is not uncommon for people with multiple disabilities and problem behaviour to experience limited opportunities to participate (Capales & Sweeney, 2010; West & Patton, 2010). Reduced opportunities to participate with other people may result in fewer opportunities to learn adaptive skills (Matson et al., 2009) and an increased dependence on caregivers to fulfil all of their needs (Power, 2008). Although Helena's food stealing and pica was potentially destructive in her own development of independent living skills, pica and food stealing also affected her family who were unable to go out because they needed to stay home to look after Helena. Overall, a deficiency in functional skills may contribute to problem behaviour and problem behaviour reduces opportunities to participate and learn new skills, which is a perpetual and self-destructive cycle with poor outcomes for the individual at the centre of the problem as well as the family.

Helena was one of five participants who were selected to participate in the study, though because of their severely aggressive behaviour which raised safety concerns for the researcher, two participants were excluded. It is important to highlight the importance of the

two participants who were excluded from the study because it reiterates issues concerning the intensity and severity of behavioural problems that can exist in respite care settings. The relatively small changes in staff behaviour that were required to implement the intervention, and which resulted in, virtually eliminating a frequent problem behaviour demonstrate the potential for people with more severely challenging behaviour to be helped. People with severely challenging behaviour experience an increased risk of exclusion from some supportive settings, such as day placement centres (West & Patton, 2010). If families are unable to access respite, even in the form of a break while their son or daughter attends day placement, families ultimately may relinquish care of their family member to residential services (Nankervis et al., 2011). Thus there is a population of people with severely challenging behaviour who need support to reduce their problem behaviours in order to alter a possibility that they will live in residential care settings and be excluded from educational settings. Understanding the reasons for problem behaviour may help with the identification of suitable replacement behaviours. In this study it became evident that suitable replacement behaviour included functional communication training as it targeted hunger, the main motivating factor for engaging in food stealing and pica. Therefore, if the reasons for engaging in aggressive and severely challenging behaviours are understood via functional analysis, the identification of suitable replacement behaviours that serve the same purpose may be able to reduce the severity or frequency of problem behaviours. The severity of Helena's food stealing and pica may be considered tame relative to aggressive behaviours, however, the reduction of Helena's problem behaviours after acquisition of NZSL may give hope to people and their families who are struggling to cope with more extreme levels of problem behaviour.

Helena's case may exemplify a wider issue of problem behaviour being perpetuated by a lack of opportunity to receive instruction to learn functional skills in particular settings

such as respite care. Although the respite care agency has the intention of providing an educative experience for their service users (Ministry of Health, 2013a), there may be other people, like Helena, who are not receiving functional skills training even though they have the potential to learn skills that could result in more opportunities for their social and personal development. If young adults have more opportunities to develop functional skills, they may become less reliant on their families for support, because they are able to do more tasks for themselves independently. The main purpose of respite is to provide families with a break from supporting their child with multiple disabilities and problem behaviour (Capales & Sweeney, 2010), but if young adults are more independent, this may ultimately reduce the need for respite services. The potential outcome of functional skills training in respite settings is that the chronic dependency families may experience with respect to respite services may decrease. In addition, reduced dependency on respite services in the long-term may provide other young adults with problem behaviours the opportunity to attend respite care, due to the limited spaces available.

The results from the social validity questionnaire showed that function-based skills training was an effective and acceptable method of helping Helena during her visits to the respite centre as she engaged in fewer incidences of problem behaviour. In addition, respite staff who may have limited training and qualifications deemed functional communication training easy to understand and implement. In the literature, parents have stated that they often do not give their children opportunities to develop independence because of the time and effort required to teach skills and the lack of belief that their child can actually complete the task (Harr et al., 2011; Power, 2008). Helena's food stealing and pica had been occurring for at least two years while she was attending the respite centre and staff had not implemented any training programmes previously with Helena. In accordance with Harr and colleagues (2011) and Power (2008), an absence of skill training at the respite centre could be

related to the perceived time and effort required by staff to change behaviour. Teaching new skills does require time and effort (Umbreit et al., 2007), but in Helena's case this was shown to be moderate. Perceptions by staff of the effort required to change clients' challenging behaviours and improving adaptive skills may be an unreliable guide to how difficult such changes are, especially if based on careful functional assessment.

Limitations

The first limitation includes the maintenance of treatment effects. Follow-up data was obtained one month after the intervention phase had ended. The short duration of follow-up data of food stealing, pica and NZSL collected one month after FCT and AM had ended may reduce the ability to predict whether Helena would maintain reductions in food stealing and pica in the long-term. This is because the frequency of Helena's use of NZSL and food stealing and pica during follow-up could be inflated because of high rates of staff motivation to provide reinforcement during FCT and AM. Had the follow-up phase been conducted after a longer period of time (e.g., six months after the intervention), more definitive conclusions could be drawn around the maintenance of NZSL training on the reductions of Helena's food stealing and pica.

A second limitation included the limited range of behaviours and settings assessed. Firstly, the effects of the interventions were not measured in any environment other than the respite centre (e.g., workplace or home). This means that it is not known whether the skills Helena was learning at the respite centre were transferred to her behaviours at home or at her work placement or whether other environments had any influence on the acquisition of her new skills or behaviour. For example, if Helena had afternoon tea at her work placement before coming to the respite centre, this would likely have altered her motivation to engage in food stealing behaviour at the respite centre. Secondly, the dependent variables included two

of Helena's problem behaviours (i.e., food stealing and pica) and one of Helena's positive behaviours (i.e., NZSL). Therefore it is not known whether FCT and AM had any effect on multiple other problem behaviours that Helena displayed or whether Helena's other positive behaviours improved.

A third limitation includes a lack of experimental control. This study included the implementation of functional assessment and positive behaviour support with one participant, and it did not include replications of the intervention either over additional cases or other settings or behaviours using the logic of single-case research. In addition, this is the only known study to be conducted strictly in a respite care centre for young adults with multiple disabilities. Therefore, as the number of participants and other studies in respite care settings are limited, the effects of the interventions can only be compared with the frequency of problem and positive behaviours displayed by Helena at baseline. Therefore, the level of confidence that this type of positive behaviour support plan could be effective with other participants in the respite care setting is limited.

Implications for Future Research

Severe cases of problem behaviour may limit a person's ability to become involved in their community. Therefore, replications of this study with other people who attend respite care settings may build on our understanding of the effectiveness of functional analysis and function-based intervention in respite care settings. More importantly, if this study is successfully replicated with one more person, it may build up confidence that such interventions work in respite care settings with young adults with severe and challenging behaviour.

Helena's food stealing and pica were addressed relatively quickly and effectively with FCT and AM which may provide hope that further skills training could reduce other problem

behaviours Helena, and people like her, may experience. In addition, an assessment of the participant's proficiency of skills and the effects on problem behaviours across settings would provide more of an understanding about how skills are learned and maintained. If the positive effects of skills training are maintained across settings, there may be more motivation for staff in short-term residential settings to implement positive behaviour support strategies with people with disabilities.

The majority of studies included in the meta-analysis by Kurtz and colleagues (2011) conducted with people who have disabilities and problem behaviour have used single-case research designs (Kurtz et al., 2011). Individuals with multiple disabilities will vary in the strength and nature of their disabilities, abilities and problem behaviours. Due to the complexity of controlling for variations in participants multiple disabilities, abilities and problem behaviours, there is a possibility that the strategies that produced positive outcomes for Helena may have depended on the uniqueness of Helena, rather than the effectiveness of the intervention. Thus, each person who takes part in this style of assessment and intervention will likely have a different outcome that is unique to their ability and disability. However, single-case studies may help to identify unique interpersonal factors that may be vital to the success of the intervention (Campbell et al., 2012). Therefore, because of the unique interplays between disabilities, abilities, problem behaviours and other confounding factors (e.g., medication), further single-case research may contribute to our identification of those factors which are vital to the success of the intervention.

Interventions conducted in the respite care setting have largely been neglected in the past. Numerous studies have concluded that respite care is seen as a positive support service to help families cope and manage the stress of looking after their child with multiple disabilities and problem behaviour at home and also providing the individual with new experiences of living away from home (Capales & Sweeney, 2010; Chan et al., 2012;

Nankervis et al., 2011; Walden et al., 2000), however, families may become more dependent on respite services if their children are not taught the functional skills they require to become more independent (Capales & Sweeney, 2010). This study has illustrated the potential improvements functional skills training could have for an individual's independence and quality of life. The opportunity to learn adaptive skills is limited when a person has problem behaviours that restrict their access to services and opportunities to learn. However, the respite environment may have a unique opportunity to enhance a person's skills. Teaching functional skills in a respite environment may tackle the underlying issue that initially created the demand for respite services. One of the main reasons a family may access respite care is because they are unable to cope with their son's or daughter's problem behaviour and multiple disabilities (Capales & Sweeney, 2010). This study has not shown how functional skills training influenced the family at home, however, the potential that a person will be able to live with less restriction is positive and the speed of acquisition illustrates the potential that more can be done to help other people in a similar situation.

Helena had experienced 16-years of New Zealand special school education followed by six years of work placement education. Over two decades of participation in New Zealand education, Helena may have either 1) received limited instruction on how to communicate her needs and/or 2) the instruction she received was not effective, it is not now possible to tell which is the case. After approximately eight hours of FCT at the respite centre, Helena was able to communicate her desire to eat food using one universally-used manual sign. This finding in particular has highlighted a potential limitation of educational settings to teach individuals functional skills training, particularly in communication. Self-determination occurs when people have more opportunities to make choices, set goals and solve problems, however, the degree to which an individual can express self-determination depends on their abilities and skill level (Wehmeyer & Schwartz, 1997). Positive behaviour training gave

Helena the skills she needed to increase her self-determination and ultimately, the ability to alter the outcome of the events within her environment. In accordance with the *Code of Health and Disability Services Consumers' Rights* (Health and Disability Commissioner's Office, 1994), our goal as researchers, teachers or parents should be to prioritise self-determination in any intervention for people with multiple disabilities.

Conclusion

People with severe and multiple disabilities are particularly vulnerable to developing challenging behaviour as a result of underdeveloped functional skills. Caregivers or staff may lack confidence in supporting young adults in public settings or new environments because of problematic behaviours. Thus, the challenging behaviour that emerges as a result of deficiencies in functional skills can be perpetually self-destructive because opportunities to develop more skills are hindered by less exposure to new experiences. Thus, the young adult with problem behaviours can become restricted to environments that are overly familiar and the number of opportunities to develop skills from new people, within new environments or situations, diminishes. As a result, challenging behaviours may worsen and people with challenging behaviour risk exclusion from more services and ultimately reduced opportunities to learn new skills. It became evident from the findings in this study that providing opportunities to learn alternative methods of communicating reduced the food stealing and pica of a young adult with multiple disabilities in a short-stay setting. The interventions resulted in relatively small changes to staff behaviour who perceived the interventions to be easy to implement. The respite setting can include untrained staff and is one of the most varied, transient and time-limited environments of the many settings that an individual may encounter. If behaviour can be modified in one of the most unfamiliar and diverse environments such as the respite setting, then great opportunities exist for individuals

to learn skills in more familiar environments and experience reductions in their problem behaviours.

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APPENDIX A.

UNIVERSITY ETHICS COMMITTEE APPROVAL

HUMAN ETHICS COMMITTEE

Secretary, Lynda Griffioen
Email: human-ethics@canterbury.ac.nz

Ref: HEC 2013/152

13 December 2013

Corrina van Eyk
School of Health Sciences
UNIVERSITY OF CANTERBURY

Dear Corrina

The Human Ethics Committee advises that your research proposal "Problem behaviours in respite care: evaluating functional analysis and positive behaviour support interventions" has been considered and approved.

Please note that this approval is subject to the incorporation of the amendments you have provided in your email of 6 December 2013.

Best wishes for your project.

Yours sincerely



Lindsey MacDonald
Chair
University of Canterbury Human Ethics Committee

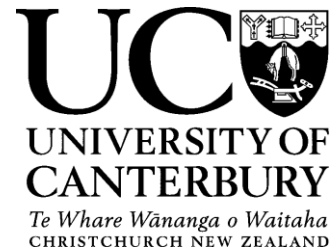
APPENDIX B.
AGENCY INFORMATION SHEET

Department of Health Sciences

Telephone:

Email: corrina.vaneyk@pg.canterbury.ac.nz

4th October 2013



Information Sheet for Agency



Kia ora koutou. My name is Corrina van Eyk and I am studying for a Master's degree in Child and Family Psychology at the University of Canterbury. As part of my degree I am writing a thesis titled: "Problem behaviours in respite care: Evaluating functional analysis and positive behaviour support interventions".

The aim of my research is to investigate whether strengthening positive behaviour skills will reduce problem behaviours in young adults attending a respite facility.

You are invited to nominate three young adults who attend the respite facility to participate in my study.

The agency, the respite staff, the parents of the nominated young person and the nominated young person will give voluntary informed consent to participate in the study.

The study and involvement of the agency will involve the following steps.

1. Determine whether the agency wishes to participate in the study. Please read this information sheet as an overview of the research process. In addition, I look forward to meeting with you to discuss this study in more detail and to answer any questions you may have about the research.

If the agency wishes to participate in the study, the next step involves:

2. Nominate three young adults from the respite centre to participate in the study. To be eligible, the young adults must have (1) an intellectual disability; (2) an additional neurological, developmental, sensory or physical disability and (3) exhibit problem behaviour (i.e., self-harm, screaming, or absconding. In addition to these criteria, the young adults must **not** have (4) a diagnosed mental health problem, (5) aggression toward others or (6) have hepatitis or other communicable diseases. After three participants have been nominated, you are invited to send the nominated young adult and their parent the Parent and Participant Information Sheet and Consent Form and the respite staff the Respite Staff Information Sheet and Consent Form. The information packs will be provided to you by the researcher. This may take you a total of 20 minutes. The young adult and parent must be able to freely consent to or decline to participate in the study after receiving the information pack.

The study will only continue if the respite staff, parent and young adult provide voluntary written consent. The young adult will be able to give assent throughout the observation sessions and intervention sessions, as explained in part (4).

When all parties have given informed written consent, the functional analysis will involve the following steps.

3. The respite care staff and the parents of the young adult will be invited to attend an interview with me one-on-one and at a time of their preference. The interview will last approximately 30 minutes and will involve questions about the young adult's positive and problem behaviours. The interview will include questions that gather information about the duration of the behaviours, situations where the behaviour occurs and the events that may precede and follow the behaviour. The respite staff and parents will receive a \$10 gift voucher to compensate their time.

4. I would visit the young adult while they are attending the respite centre and observe the behaviours identified in the interview with respite staff and parents. Observations will last 20 minutes and the frequency of observations will be between 12 to 20 sessions, so they may occur over one or two visits to the respite centre. The researcher will ask the young adult for permission to observe during their stay. For example, “Would you like to go with Corrina?” Or. “Can Corrina stay here with you today?” The young adult will assent for the observation to go ahead. The young adult will receive a \$10 gift voucher if they choose to participate in the observation sessions.
5. The researcher will suggest an intervention and a back-up intervention to the young adult, parent, respite staff and the agency based on the information gathered from interviews with parents and support staff and the observations with the young adult. All parties will be given an additional information pack outlining the steps involved in the proposed intervention.

The intervention process will only continue if the agency, respite staff, parents of the young adult and the young adult give their voluntary written consent for the intervention to go ahead.

If the agency, respite staff, parents of the young adult and the young adult give their voluntary written consent to implement the intervention, the next step will be.

6. I will distribute an instruction sheet about the implementation of the intervention to each of the key respite staff. I will have a meeting with the key respite staff that work with the young adult to discuss the application of the intervention and this will also be an opportunity for respite staff to ask questions about the intervention. The meeting will last approximately one hour.

The respite staff will implement the intervention over one to three of the young adult's visits to the respite centre. The duration and intensity of the intervention will depend on the intervention chosen after the functional assessment (i.e., interviews and observation). During the intervention I will be able to support the respite staff as needed.

7. During the young adults visit to the respite centre, I will ask the young adult if they are happy for me to observe them during their visit to the respite centre. The young adult will assent for the observation to go ahead. Observations will last 20 minutes and the frequency of observations will be between 20 to 32 sessions throughout the intervention phase. The number of sessions in one day may be between one and four, so sessions may occur over two or three visits to the respite centre. During the observation session I will be recording the frequency of problem and positive behaviours, the events that proceed and follow the behaviours and the duration of positive and problem behaviours, as in the previous observation session.
8. I will offer the young adult and the respite staff involved in the intervention a \$10.00 gift voucher as a thank you for participating in the intervention sessions.

At the end of the intervention, the next step is:

9. I will hold a meeting with the respite staff, parents and young adult to discuss any changes in behaviour that were noted during intervention. This will also be an opportunity to discuss the intervention plan and decide whether all parties would like to phase out the intervention or review the intervention plan for ongoing use at the respite centre.

If the primary intervention does not have a successful outcome (i.e., positive behaviours increased or problem behaviours decreased), there will be a back-up intervention available for discussion with the respite staff, parents and the young adult. The back-up

intervention may be a reviewed version of the primary intervention or a different type of intervention.

If the primary intervention is unsuccessful, the next steps are:

10. A back-up intervention information pack will be sent to the respite staff, the parents and the young adult.

11. Respite staff, parents and the young adult will decide whether they want to go ahead with the back-up intervention.

If the respite staff, parents and young adult are interested in the back-up intervention, the next steps are:

12. Respite staff, parent and the young adult will provide voluntary written consent to the implementation of the back-up intervention.

13. Steps 6-8 will be followed during implementation of the back-up intervention.

The potential benefits of this study are that the young adult receives one-on-one instruction over three of their respite visits which may help them to learn additional positive behaviour skills or reduce some of their problem behaviours, with these changes helping them to participate more freely in the community.

I will be taking the following steps to ensure confidentiality. The signed consent form will be kept in a locked file cabinet in my supervisor's office at the University of Canterbury, and only my supervisor and I will have access to them. The identity of the agency, respite staff, parents and young adults who participate will not be recorded on any other document. The participating young adults will be given a code name, respite staff will only be known as "respite staff", the parents of the young adult will be known as "code name's parents" and the agency will only be referred to as "the agency". This data will be destroyed five years after

the thesis is submitted. Any publications from this research will not contain any information that permits the identification of any participants, parents, agency staff or the agency.

In the performance of the tasks and application of the procedures there is no risk of harm to the participant, the researcher or the respite staff. The participant will be encouraged to continue to use existing positive behaviours and may successfully learn strategies that reduce their problem behaviour, or in the case that they may not learn the strategies the participant will continue to act as they normally would.

You may receive a summary of the project results by contacting the researcher at the conclusion of the project.

Participation is voluntary and you have the right to withdraw up until the point where your participation in the project is completed without any negative consequences for you or the young adult. If you withdraw, I will remove all project information relating to you from the project database.

The results of the project may be published, but you may be assured of the complete confidentiality of data gathered in this investigation and your identity will not be made public in any project documentation. The results of the project will be reported in a Masters thesis, and possibly in publication in journals and in presentations at professional conferences.

A thesis is a public document and will be available through the UC Library.

The project is being carried out as a requirement for a Master's in Child and Family Psychology by Corrina van Eyk under the supervision of Associate-Professors Kathleen Liberty and Neville Blampied, who can be contacted at Kathleen.liberty@canterbury.ac.nz or Neville.blampied@canterbury.ac.nz. They will be pleased to discuss any concerns you may have about participation in the project.

This project has been reviewed and approved by the University of Canterbury Human Ethics Committee, and participants should address any complaints to The Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

If you agree to participate in the study, you are asked to complete the consent form and return to

I look forward to meeting with you.

Yours sincerely,

Corrina van Eyk

APPENDIX C.

AGENCY CONSENT FORM

Problem Behaviours in Respite Care: Evaluating Functional Analysis and Positive Behaviour Support Interventions

Consent Form for Agency

I have been given a full explanation of this project and have had the opportunity to ask questions.

I understand what is required of me if I agree to take part in the research.

I understand that participation is voluntary and I may withdraw at any time without penalty.

Withdrawal of participation will also include the withdrawal of any information I have provided should this remain practically achievable.

I understand that any information or opinions I provide will be kept confidential to the researcher and the researcher's supervisors, and that any published or reported results will not identify the participants. I understand that a thesis is a public document and will be available through the UC Library.

I understand that all data collected for the study will be kept in locked and secure facilities and/or in password protected electronic form and will be destroyed after five years.

I understand the risks associated with taking part and how they will be managed.

I understand that I am able to receive a report on the findings of the study by contacting the researcher at the conclusion of the project.

I understand that I can contact the researcher *Corrina van Eyk*

(corrina.vaneyk@pg.canterbury.ac.nz) or supervisor's *Kathleen Liberty*

(Kathleen.liberty@canterbury.ac.nz) and *Neville Blampied*

(Neville.blampied@canterbury.ac.nz) for further information. If I have any complaints, I can contact the Chair of the University of Canterbury Human Ethics Committee, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

By signing below, I agree to participate in this research project.

Name:

Date:

Signature:

Please return the consent form by [10th January 2014] to: []

Yours Sincerely,

Corrina van Eyk

APPENDIX D.
PARENT AND YOUNG ADULT INFORMATION SHEET

Department of Health Sciences

Telephone: +64

Email: corrina.vaneyk@pg.canterbury.ac.nz

9th October 2013



Dear Parent and Son/Daughter. This information sheet has been sent to you by the agency your son/daughter attends for respite. The agency believes that you and your son/daughter may be interested in participating in the research described in the information sheet. This is a University of Canterbury Masters student research project.

Dear Parent,

I think your son/daughter could be interested in this opportunity,

(Respite Service Manager's Signature)

Information Sheet for Parents and Young Adults

Kia ora! I'm Corrina van Eyk and I am a student studying Child and Family Psychology at the University of Canterbury. I am interested in how positive behaviour support interventions can increase positive behaviours and reduce problem behaviours. I would like to invite you and your son/daughter to participate in my study. "*Problem behaviours in respite care: Evaluating functional analysis and positive behaviour support interventions*".

The purpose of my research is to investigate whether strengthening positive behaviour skills will reduce problem behaviours in young adults attending a respite facility.

Problem behaviours can range from the very mild to the very severe but are essentially considered to be inappropriate or harmful for the individual. Some examples of problem behaviours may include, but are not limited to, self-harming (e.g., head hitting/punching), drooling, nail biting, running away, yelling, stealing (e.g., food, money, etc.) or defiance.

Participation in my study would involve the following:

1. I would interview you and the respite staff one-on-one before the intervention sessions for approximately 30 minutes. The interview will involve questions about the positive behaviours and the types of problem behaviours that your son/daughter displays and some of the events that likely happen before and after these behaviours happen. You and the respite staff can freely decline to answer any question. The interview could occur at your home, at the respite centre, or another place we could arrange to meet. You and the respite staff will each receive a \$10.00 gift voucher for participating in the interview.
2. I would observe your child during one or two of their visits at the respite centre and record the occurrence of any positive behaviours and problem behaviours that occur during their stay. I will sit in the same room as your child and observe them for 20 minutes at a time during different activities. I will be using an observation recording sheet to record the events that naturally occur before and after the behaviours identified in the interview with you and the respite staff. Your child will receive a \$10.00 gift voucher for participating in the observation sessions.
3. I will provide you, your child and the respite staff with a suggestion for a positive behaviour support intervention. The information pack will provide you with a step-by-step description of what the intervention will involve. You and your child can read the information about the intervention and are free to accept or decline to participate in the suggested intervention.

4. The respite staff will be responsible for implementing the intervention with support and coaching from me as needed. The intervention may occur over two or three of your child's visits to the respite centre, depending on the intervention chosen.
5. Throughout the intervention, I will be observing your child during two or three visits to the respite centre. Each observation session will last approximately 20 minutes and the number of sessions will depend on the number of activities your child participates in (i.e., meal times, activities/games, transportation). Your child will receive a \$10.00 Westfield gift voucher for participating in the intervention.
6. After the intervention, I will hold a meeting with you, your child and your child's key respite staff to discuss how the intervention went and whether you would like to phase out the intervention, implement a back-up intervention or to review the intervention to make it part of your child's behaviour support plan.

The potential benefits of this study are that your child receives one-on-one instruction over three of their respite visits which may help them to learn additional positive behaviour skills or reduce some of their problem behaviours, with these changes helping them to participate more freely in the community.

I will be taking the following steps to ensure confidentiality. The signed consent form will be kept in a locked file cabinet in my supervisor's office at the University of Canterbury, and only my supervisor and I will have access to them. The identity of the agency, respite staff, parents and young adults who participate will not be recorded on any other document. The participating young adults will be given a code name, respite staff will only be known as "respite staff", the parents of the young adult will be known as "code name's parents" and the agency will only be referred to as "the agency". This data will be destroyed five years after the thesis is submitted. Any publications from this research will not contain any information that permits the identification of any participants, parents, agency staff or the agency.

In the performance of the tasks and application of the procedures there is no risk of harm to the participant, the researcher or the respite staff. The participant will be encouraged to continue to use existing positive behaviours and may successfully learn strategies that reduce their problem behaviour, or in the case that they may not learn the strategies the participant will continue to act as they normally would.

You may receive a summary of the project results by contacting the researcher at the conclusion of the project.

Participation is voluntary and you have the right to withdraw up until the point where your participation in the project is completed without any negative consequences for you or your child. If you withdraw, I will remove all project information relating to you from the project database.

The results of the project may be published, but you may be assured of the complete confidentiality of data gathered in this investigation and your identity will not be made public in any project documentation. The results of the project will be reported in a Masters thesis, and possibly in publication in journals and in presentations at professional conferences.

A thesis is a public document and will be available through the UC Library.

The project is being carried out as a requirement for a Master's in Child and Family Psychology by Corrina van Eyk under the supervision of Associate-Professors Kathleen Liberty and Neville Blampied, who can be contacted at Kathleen.liberty@canterbury.ac.nz or Neville.blampied@canterbury.ac.nz. They will be pleased to discuss any concerns you may have about participation in the project.

This project has been reviewed and approved by the University of Canterbury Human Ethics Committee, and participants should address any complaints to The Chair, Human Ethics

Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

If you agree to participate in the study, you are asked to complete the consent form and return to

I look forward to meeting with you.

Yours sincerely,

Corrina van Eyk

APPENDIX E.

**PARENT AND YOUNG ADULT ASSENT FORM FOR FUNCTIONAL
ASSESSMENT**

Problem Behaviours in Respite Care: Evaluating Functional Analysis and Positive Behaviour Support Interventions

Assent Form for Parents/Caregivers of Participants and Participants

I have been given a full explanation of this project and have had the opportunity to ask questions.

I understand what is required of me if I agree to take part in the research.

I understand that participation is voluntary and I may withdraw at any time without penalty.

Withdrawal of participation will also include the withdrawal of any information I have provided should this remain practically achievable.

I understand that any information or opinions I provide will be kept confidential to the researcher and the researcher's supervisors, and that any published or reported results will not identify the participants. I understand that a thesis is a public document and will be available through the UC Library.

I understand that all data collected for the study will be kept in locked and secure facilities and/or in password protected electronic form and will be destroyed after five years.

I understand the risks associated with taking part and how they will be managed.

I understand that I am able to receive a report on the findings of the study by contacting the researcher at the conclusion of the project.

I understand that I can contact the researcher *Corrina van Eyk* (corrina.vaneyk@pg.canterbury.ac.nz) or supervisor's *Kathleen Liberty* (Kathleen.liberty@canterbury.ac.nz) and *Neville Blampied* (Neville.blampied@canterbury.ac.nz) for further information. If I have any complaints, I can contact the Chair of the University of Canterbury Human Ethics Committee, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

By signing below, I agree to participate in this research project.

Name:

Date:

Signature:

Please return the consent form by

to:

Yours Sincerely,

Corrina van Eyk

APPENDIX F.
RESPITE STAFF INFORMATION SHEET

Department of Health Sciences

Telephone:

Email: corrina.vaneyk@pg.canterbury.ac.nz

10th October 2013

Information Sheet for Respite Staff



Kia ora koutou. My name is Corrina van Eyk and I am studying for a Master's degree in Child and Family Psychology at the University of Canterbury. As part of my degree I am writing a thesis titled: "Problem behaviours in respite care: Evaluating functional analysis and positive behaviour support interventions".

The aim of my research is to investigate whether strengthening positive behaviour skills will reduce problem behaviours in young adults attending a respite facility.

Participation in my study would involve the following:

1. First, read this information pack. If you wish to participate in the first phase of the study, please sign and return the consent form.

If the agency, respite staff, parents and young adult consent to participate in the first phase of the study, the additional steps would include:

2. Second, I would interview you and the parents of the young adult, one-on-one for approximately 30 minutes. The interview will involve questions about the positive behaviours and types of problem behaviours that the young adult displays and some of the events that likely happen before and after these behaviours occur. You can freely decline to answer any question. The interview could occur at your home, at the

respite centre, or another place we could arrange to meet. You will receive a \$10.00 gift voucher for your participation in the interview.

3. I will observe the young adult over one or two of their visits to the respite centre for 20 minutes at a time between one and four times per day. I will be recording the frequency of positive and problem behaviours and the events that proceed and follow these behaviours.
4. I will send an information pack to you, the agency, the parents and the young adult with a suggestion for a positive behaviour support intervention. The information pack will provide you with a step-by-step instruction of what the intervention will involve. You can read the information about the intervention and have the freedom to accept or decline to participate in the intervention.

If all parties have provided voluntary written consent to participate in the intervention phase, the additional steps would include:

5. You will be involved in implementing the intervention over two or three of the young adult's visits to the respite centre and I will be available to support you or coach you during the intervention. I will meet with you, the parents and the young adult prior to implementing the intervention to discuss the steps involved in the intervention. This will also be an opportunity for me to answer any of your questions about the intervention or make revisions to the intervention.
6. When the intervention is in progress, I will be observing the young adult during their two or three visits to the respite centre. Each observation session will last approximately 20 minutes and the number of sessions will depend on the number of activities the young adult participates (i.e., meal times, activities/games, transportation). You will receive a \$10.00 Westfield gift voucher for participating in the intervention.

7. After the intervention, I will hold a meeting with you, the parents of the young adult and the young adult to discuss how the intervention went and whether you would like to phase out the intervention, implement a back-up intervention or to review the intervention to make it part of the young adults behaviour support plan.

The potential benefits of this study are that your child receives one-on-one instruction over three of their respite visits which may help them to learn additional positive behaviour skills or reduce some of their problem behaviours, with these changes helping them to participate more freely in the community.

I will be taking the following steps to ensure confidentiality. The signed consent form will be kept in a locked file cabinet in my supervisor's office at the University of Canterbury, and only my supervisor and I will have access to them. The identity of the agency, respite staff, parents and young adults who participate will not be recorded on any other document. The participating young adults will be given a code name, respite staff will only be known as "respite staff", the parents of the young adult will be known as "code name's parents" and the agency will only be referred to as "the agency". This data will be destroyed five years after the thesis is submitted. Any publications from this research will not contain any information that permits the identification of any participants, parents, agency staff or the agency.

In the performance of the tasks and application of the procedures there is no risk of harm to the participant, the researcher or the respite staff. The participant will be encouraged to continue to use existing positive behaviours and may successfully learn strategies that reduce their problem behaviour, or in the case that they may not learn the strategies the participant will continue to act as they normally would.

You may receive a summary of the project results by contacting the researcher at the conclusion of the project.

Participation is voluntary and you have the right to withdraw up until the point where your participation in the project is completed without any negative consequences for you or your child. If you withdraw, I will remove all project information relating to you from the project database.

The results of the project may be published, but you may be assured of the complete confidentiality of data gathered in this investigation and your identity will not be made public in any project documentation. The results of the project will be reported in a Masters thesis, and possibly in publication in journals and in presentations at professional conferences.

A thesis is a public document and will be available through the UC Library.

The project is being carried out as a requirement for a Master's in Child and Family Psychology by Corrina van Eyk under the supervision of Associate-Professors Kathleen Liberty and Neville Blampied, who can be contacted at Kathleen.liberty@canterbury.ac.nz or Neville.blampied@canterbury.ac.nz. They will be pleased to discuss any concerns you may have about participation in the project.

This project has been reviewed and approved by the University of Canterbury Human Ethics Committee, and participants should address any complaints to The Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

If you agree to participate in the study, you are asked to complete the consent form and return to *[address]*

I look forward to meeting with you.

Yours sincerely,

Corrina van Eyk

APPENDIX G.

RESPITE STAFF CONSENT FORM FOR FUNCTIONAL ASSESSMENT

Functional analysis of and the effects of a brief behavioural intervention for problem behaviours of young adults attending a respite care facility

Consent Form for Respite Staff

I have been given a full explanation of this project and have had the opportunity to ask questions.

I understand what is required of me if I agree to take part in the research.

I understand that participation is voluntary and I may withdraw at any time without penalty.

Withdrawal of participation will also include the withdrawal of any information I have provided should this remain practically achievable.

I understand that any information or opinions I provide will be kept confidential to the researcher and the researcher's supervisors, and that any published or reported results will not identify the participants. I understand that a thesis is a public document and will be available through the UC Library.

I understand that all data collected for the study will be kept in locked and secure facilities and/or in password protected electronic form and will be destroyed after five years.

I understand the risks associated with taking part and how they will be managed.

I understand that I am able to receive a report on the findings of the study by contacting the researcher at the conclusion of the project.

I understand that I can contact the researcher *Corrina van Eyk* (corrina.vaneyk@pg.canterbury.ac.nz) or supervisor's *Kathleen Liberty* (Kathleen.liberty@canterbury.ac.nz) and *Neville Blampied* (Neville.blampied@canterbury.ac.nz) for further information. If I have any complaints, I can contact the Chair of the University of Canterbury Human Ethics Committee, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

By signing below, I agree to participate in this research project.

Name:

Date:

Signature:

Please return the consent form by [date] to: [address].

Yours Sincerely,

Corrina van Eyk

APPENDIX H.

POSITIVE BEHAVIOUR PLAN ONE FOR FOOD STEALING

Department of Health Sciences

Telephone:

Email: corrina.vaneyk@pg.canterbury.ac.nz

15th April 2014

Intervention Instruction Sheet for Parents and Son/Daughter

I have outlined the procedures for two interventions to reduce food stealing behaviours. Both interventions are based on the study by Schmidt, J., Drasgow, E., Halle, J., Martin, C. and Bliss, S. (2013). Discrete-trial functional analysis and functional communication training with three individuals with autism and severe problem behaviour. *Journal of Positive Behaviour Interventions*, 16(1), 44-55.

Intervention one (Schmidt et al., 2013) would involve the following:

- Problem behaviour: Stealing food. Taking food without asking.
- Functional analysis: Food stealing may be maintained by feeling hungry or seeking tangible objects.
- Intervention: Sign “eat” using New Zealand Sign Language. The NZSL sign for ‘eat’ involves bringing all of the fingers on one hand together (as if holding a grape) and bringing the fingers up to the lips. This sign indicates “I would like something to eat”.



- Intervention duration: Two visits to the respite centre. During the participant's first visit to the respite centre, staff will implement a 15-trial mass session. During these trials, staff will teach the participant to use the communicative sign to indicate she would like food and staff will provide food each time the participant produces the signal. Sessions will occur at the same time each day. For example, mass sessions may occur at snack times 3:00pm to 4:00pm and 7:30pm (after dinner) every evening during the client's stay at the respite centre. In the morning, staff will continue to reinforce signing, though the sessions will only occur before breakfast time 7:30-8:00am and may only occur once or twice.

Staff Instructions

Week One, Day One

Snack Time

- 1) When Helena arrives at the respite centre (3:00pm) staff will prepare a plate of food that can be divided up and placed into a small cupcake-sized bowl. Staff will then place the bowl in the centre of the table and sit at the table. The amount of food in the bowl could be equivalent to 4-5 pieces of popcorn.
- 2a) If Helena does not approach the food, staff can gesture her toward the food saying "do you want some food Helena?"
- 2b) If Helena approaches the food:
- 3) Staff will physically show Helena the hand signal for eat while saying "would you like to eat?" During this time, staff may hand-over-hand prompt Helena to sign 'eat'.
- 4) When Helena uses the sign 'eat' whether with hand-over-hand prompting or verbal prompting, staff will **immediately** give Helena the small bowl of food.

- 5) Staff will continue to use prompting to encourage Helena to use the sign for 'eat' fifteen times, or until Helena loses interest in the food.

Dinner Time

- 6) Staff will prepare a meal for Helena and place the plate/bowl in the centre of the table.
- 7) Staff will prompt Helena to use her sign for 'eat', whether verbally, hand-over-hand or gestured.
- 8) When Helena produces the sign, staff will give Helena the plate of food.

Supper Time

- 9) Staff will prepare a snack using the small cupcake-sized bowl and place the bowl in the centre of the table. Staff will follow the same protocol as for snack time (i.e., fifteen times).

Week One, Day Two

Breakfast Time

- 10) Staff will prepare Helena's breakfast and prompt her to sign 'eat' before placing the food in her reach.

Snack Time

- 11) When Helena arrives home from work at 3:00pm, staff will prepare a snack and place the snack in the small bowl in the centre of the table.

12a) If Helena does not approach the food, staff can gesture her toward the food saying "do you want some food Helena?"

12b) If Helena approaches the food:

13) Staff will allow a **two second delay** before prompting Helena to use the sign for 'eat'.

This allows Helena some time to produce the sign herself without prompting.

14a) If Helena produces the sign, staff will **immediately** provide Helena the small bowl of food.

14b) If Helena tries to take the food without signing 'eat', staff will remove the food for 15 seconds and then represent the food while prompting Helena to use the sign for 'eat'.

15) Staff will continue to fill the small bowl with food until Helena becomes disinterested in the food (possibly offer Helena the bowl 8-10 times).

Dinner Time

16) Staff will prepare a meal for Helena and place the plate/bowl in the centre of the table.

17) Staff will **wait two seconds** before prompting Helena to use her sign for 'eat', whether verbally, hand-over-hand or gestured.

18) When Helena produces the sign, staff will give Helena the plate of food.

Supper Time

19) Staff will prepare a snack using the small cupcake-sized bowl and place the bowl in the centre of the table. Staff will follow the same protocol as for snack time (i.e., keep refilling the bowl until Helena becomes disinterested in the food).

Week Two, Day One

Staff will follow the week one, day two schedule (i.e., 2-second delay). After week two, the intervention will enter a maintenance phase.

Maintenance Phase

After two weeks of intensive training, or when Helena can independently use the sign for 'eat', staff will prompt Helena to use the sign 'eat' two to three times during her stay to ensure Helena continues to use the signing. If Helena uses the signing independently and outside of meal times, staff will provide Helena with an item of food to reinforce the signing until further notice (i.e., a meeting to be held with staff and family after the two-week period to discuss a long-term schedule).

APPENDIX I.

POSITIVE BEHAVIOUR PLAN TWO FOR FOOD STEALING

Intervention two (Schmidt et al., 2013) would involve the following:

- Problem behaviour: Stealing food. Taking food without asking.
- Functional analysis: Food stealing may be maintained by feeling hungry or seeking tangible objects.
- Intervention: A laminated card with a picture of food with the word 'food' underneath will be given to Helena. During snack times Helena will be encouraged to use the picture card to indicate to staff that Helena is feeling hungry.
- Intervention duration: Two visits to the respite centre. During Helena's first visit to the respite centre, staff will implement a 15-session mass trial. During these sessions, staff will teach Helena to use the picture card to indicate she would like food and staff will provide food **immediately** each time Helena produces the card. After two weeks, staff will continue to reinforce the use of the picture card by producing food until a thinning schedule is discussed with the participant, family and staff. Sessions will occur at the same time each day. For example, mass sessions may occur at snack times 3:00pm to 4:00pm and 5:30pm (before dinner) every evening during the client's stay at the respite centre. In the morning, staff will continue to reinforce signing, though the sessions will only occur before breakfast time 7:30-8:00am.

Staff Instructions

Week One, Day One

Snack Time

- 2) When Helena arrives at the respite centre (3:00pm) staff will prepare a plate of food that can be divided up and placed into a small cupcake-sized bowl. Staff will then

place the bowl in the centre of the table and sit at the table. The amount of food in the bowl could be equivalent to 4-5 pieces of popcorn.

2a) If Helena does not approach the food, staff can gesture her toward the food saying “do you want some food Helena?”

2b) If Helena approaches the food:

12) Staff will physically show Helena the picture card for food while saying “would you like to eat?” During this time, staff may hand-over-hand prompt Helena to hand over the card.

13) When Helena hands over the card, whether with hand-over-hand prompting or verbal prompting, staff will **immediately** give Helena the small bowl of food.

14) Staff will continue to use prompting to encourage Helena to use the card fifteen times, or until Helena loses interest in the food.

Dinner Time

15) Staff will prepare a meal for Helena and place the normal-sized plate/bowl in the centre of the table.

16) Staff will prompt Helena to use her card for ‘food’, whether verbally, hand-over-hand or gestured.

17) When Helena produces the picture card, staff will give Helena the plate of food.

Supper Time

18) Staff will prepare a snack using the small cupcake-sized bowl and place the bowl in the centre of the table. Staff will follow the same protocol as for snack time (i.e., fifteen times).

Week One, Day Two

Breakfast Time

19) Staff will prepare Helena's breakfast and prompt her to use her picture card before placing the food in her reach.

Snack Time

20) When Helena arrives home from work at 3:00pm, staff will prepare a snack and place the snack in the small bowl in the centre of the table.

12a) If Helena does not approach the food, staff can gesture her toward the food saying "do you want some food Helena?"

12b) If Helena approaches the food:

14) Staff will allow a **two second delay** before prompting Helena to use her picture card for 'food'. This allows Helena some time to produce the picture card herself without prompting.

14a) If Helena produces the picture card, staff will **immediately** provide Helena the small bowl of food.

14b) If Helena tries to take the food without using the picture card, staff will remove the food for 15 seconds and then represent the food while prompting Helena to use the picture card.

20) Staff will continue to fill the small bowl with food until Helena becomes disinterested in the food (possibly offer Helena the bowl 8-10 times).

Dinner Time

- 21) Staff will prepare a meal for Helena and place the plate/bowl in the centre of the table.
- 22) Staff will **wait two seconds** before prompting Helena to use her picture card, whether verbally, hand-over-hand or gestured.
- 23) When Helena produces the picture card, staff will give Helena the plate of food.

Supper Time

- 24) Staff will prepare a snack using the small cupcake-sized bowl and place the bowl in the centre of the table. Staff will follow the same protocol as for snack time (i.e., keep refilling the bowl until Helena becomes disinterested in the food).

Week Two, Day One

Staff will follow the week one, day two schedule (i.e., 2-second delay). After week two, the intervention will enter a maintenance phase.

Maintenance Phase

After two weeks of intensive training, or when Helena can independently use the picture card for 'food', staff will prompt Helena to use the picture card 'food' two to three times during her stay to ensure Helena continues to use the picture card. If Helena uses the picture card independently and outside of meal times, staff will provide Helena with an item of food to reinforce the use of the picture card until further notice (i.e., a meeting to be held with staff and family after the two-week period to discuss a long-term schedule).

APPENDIX J.
POSITIVE BEHAVIOUR PLAN ONE FOR PICA

Department of Health Sciences

Telephone:

Email: corrina.vaneyk@pg.canterbury.ac.nz

15th April 2014



Intervention Instruction Sheet for Parents and Son/Daughter

I have outlined the procedures for two interventions to reduce eating non-edible objects or pica. The first intervention is based on the study by Piazza, C., Fisher, W., Hanley, G., LeBlanc, L., Worsdell, A., Lindauer, S. and Keeney, K. (1998). Treatment of pica through multiple analyses of its reinforcing functions. *Journal of Applied Behaviour Analysis*, 31(2), 165-189. The second intervention is based on the study by Ricciardi, J., Luiselli, J., Terrill, S. and Reardon, K. (2003). Alternative response training with contingent practice as intervention for pica in a school setting. *Behavioural Interventions*, 18(3), 219-226.

Intervention one (Piazza et al., 1998) would involve the following:

- Problem behaviour: Eating non-edible objects or pica (i.e., rocks, leaves and flowers).
- Functional analysis: Pica may be maintained by hunger, seeking tangible objects or stimulation.
- Intervention: Presenting food items with matched texture to compete with pica.
Substitutes for rocks may include biscotti, frozen cubes of juice, large coconut chunks, carrots or nuts (almonds, peanuts); substitutes for leaves could include lettuce leaves or spinach leaves; substitutes for flowers may include soft colourful pieces of dried fruit (e.g., pineapple, papaya), red, orange or yellow capsicum, raspberries, strawberries, coloured pasta bows.
- Intervention duration: Two visits to the respite centre. One session will be implemented in the afternoons during snack time (i.e., 3:00pm- 4:00pm when Helena

arrives home from work). Any further attempts to engage in pica outside of the designated time for sessions will initiate the beginning of a new session. For example, engaging in pica at breakfast time or supper time.

Staff Instructions

Every Afternoon (3:00pm-4:00pm) during snack times

1. Staff will prepare a plate of food containing foods with textures similar to the non-edible items Helena normally attempts to consume. For example, a plate of spinach leaves, berries, nuts and large coconut chunks.
2. When Helena arrives home from work placement, staff will show Helena the plate of food and place it on a table outside on the patio area under the shelter and leave the dining room patio door open.
3. Staff will offer Helena the food (e.g., “Here Helena come and have a snack”), if she is not already consuming the food and then staff will continue with their tasks while watching Helena.
4. Staff will record whether Helena eats the food on the table on the patio or whether Helena attempts to pick up non-food items (e.g., rocks, leaves, flowers).
5. If Helena picks up a non-food item, staff will deliver a verbal reprimand (e.g., “Helena put that down, that is not edible”) and take the item away from Helena and throw it back in the garden. Staff will then redirect Helena to the food on the plate (e.g., “Helena, eat this food instead”).
6. If Helena picks up the food item, staff will deliver verbal praise every time she picks up the food (e.g., “well done Helena for eating the <food item>”).

7. Helena will continue to have access to the food on the table outside on the patio until the food is all gone, 30-45 minutes has passed or if Helena has lost interest in the food. After which, staff may guide Helena back into the house and take the plate away.

8. When snack time is completed, the session will come to a close for the day. Any attempts to eat non-edible objects would initiate a new session. The new sessions will follow the same protocols outlined above.

Maintenance Phase

After two weeks, staff can assess which items of food were associated with fewer attempts to eat non-edible objects. These items of food may then be presented on the table inside the house at snack times and assessed to see whether the change in placement of the food items will continue to reduce any attempts to eat non-edible objects.

APPENDIX K.

POSITIVE BEHAVIOUR PLAN TWO FOR PICA

Intervention Two (Ricciardi et al., 2003) would involve the following:

- Problem behaviour: Eating non-edible objects or pica (i.e., rocks, leaves and flowers).
- Functional analysis: Pica may be maintained by hunger, seeking tangible objects or stimulation.
- Intervention: When Helena picks up a non-edible item. Staff will immediately remove the item from her mouth or hand and say “Where does it belong, in the bin” and prompt Helena to place the item in the bin. When Helena puts the item in the bin, staff will praise her and then provide her with an item of food that she prefers to eat.
- Intervention duration: Two visits to the respite centre. The intervention will be implemented during snack time (i.e., 3:00pm- 4:00pm when Helena arrives home from work). If Helena picks up a non-edible item during snack time, 10 mass trials will be implemented to teach Helena to discard the item. After the 10 mass trials at the beginning of snack time, any time thereafter Helena attempts to pick up a non-edible item, one trial will occur.

Staff Instructions

Every afternoon during snack time (e.g., 3:00pm-4:00pm)

1. The patio door will be unlocked and Helena will be allowed to access the patio area during snack and meal times.
2. If Helena attempts to pick up a non-edible item, staff will immediately remove the item from her mouth or hands.
3. Staff will then say “where does this belong? In the rubbish bin.”
4. Staff will prompt Helena to take the item to the rubbish bin in the kitchen area with either a physical prompt (hand-over-hand guidance to take the item to the bin and

- throw it away), gestural prompt (pointing at the item and then pointing at the bin and giving Helena the item), or verbal prompt (asking Helena to put the item in the bin).
5. When Helena puts the item in the bin, staff will praise her and provide her with an item of food she prefers to eat (e.g., an apple piece).
 6. Staff may then redirect Helena to the patio area and repeat the process ten more times by pointing out non-edible items that Helena may normally attempt to eat and asking her to put them in the bin.
 7. When the process has been completed ten times, any additional attempts to put non-edible items into her mouth will be responded to by asking Helena to put the item in the bin. When Helena has discarded the item staff will praise her for putting the item in the bin, offer her a piece of food and then redirect her to another activity (e.g., a puzzle).
 8. If Helena discards an item that does not belong in the bin, for example a teddy bear, staff will ignore Helena by not giving her praise or providing her with an item of food. Staff will then take the item out of the bin and clean it and put it back where it belongs.

Maintenance Phase

After two weeks, staff will continue to prompt Helena to place the item in the bin contingent on the times that Helena picks up a non-edible item independently (i.e., staff have not asked Helena to pick up non-edible objects and place them into the bin).

Prompting may reduce from hand-over-hand guidance, gesturing, verbal prompts and no prompts.

APPENDIX L.

**PARENT AND YOUNG ADULT ASSENT FORM FOR
INTERVENTIONS**

Problem Behaviours in Respite Care: Evaluating Functional Analysis and Positive Behaviour Support Interventions

Assent Form for Parents/Caregivers of Participants and Participants

Two interventions have been selected and described on the other page. One of the interventions will be selected to be chosen as the first intervention and the other intervention will be reserved as a backup if the first intervention does not reduce problem behaviour.

Please circle one:

I give consent to **both interventions/one intervention** outlined above to take place at the respite care agency.

I would like **intervention one/intervention two** to take place first and **intervention one/intervention two** to be reserved as a backup intervention.

By signing below, I consent to the nominated interventions to take place at the respite care agency in the order that I have selected.

Name:

Date:

Signature:

Please return the consent form by

to:

Yours Sincerely,

Corrina van Eyk

APPENDIX M.

RESPITE STAFF CONSENT FORM FOR INTERVENTIONS

Problem Behaviours in Respite Care: Evaluating Functional Analysis and Positive Behaviour Support Interventions

Consent Form for Respite Staff

Two interventions have been selected and described on the other page. One of the interventions will be selected to be chosen as the first intervention and the other intervention will be reserved as a backup if the first intervention does not reduce problem behaviour.

Please circle one:

I give consent to **both interventions/one intervention** outlined above to take place at the respite care agency.

Intervention one/intervention two will take place first and intervention one/intervention two will be reserved as a backup intervention.

By signing below, I consent to the nominated interventions to take place at the respite care agency in the order selected by the young adult and their parents.

Name:

Date:

Signature:

Please return the consent form by

to:

Yours Sincerely,

Corrina van Eyk

APPENDIX N.

STAFF RECORDING SHEET FOR FOOD STEALING AND PICA

ABC Behaviour Recording Chart

[illegible]

APPENDIX O.
DEBRIEFING SHEET

Department of Health Sciences

Telephone: +64

Email: corrina.vaneyk@pg.canterbury.ac.nz

6th June 2014



Debriefing Sheet

This study was an investigation into whether positive behaviour interventions developed from functional analyses would increase the frequency of positive behaviours and reduce the frequency of problem behaviours in a respite care setting. For example, if a functional analysis showed tantrums were used to gain staff attention, then a positive behaviour intervention may use staff attention as reinforcement for behaviour that is appropriate to increase the frequency of positive behaviour and reduce problem behaviour (i.e., tantrums).

In this study, a functional analysis was conducted with participants, parents and respite care staff. The functional analysis helped identify possible reasons for the problem behaviour and to determine other positive behaviours the participant engaged in that we could strengthen or increase through the positive behaviour intervention. After the functional analysis was conducted, my supervisors and I developed an intervention plan that we then showed to the participant, their parents, the respite staff and the agency to gain consent to implement the intervention at the respite centre. After consent was gained, the respite staff members were trained in the procedures of the intervention and the intervention was carried out over the participant's respite visits.

We anticipated that the participant would show an increase in positive behaviour skills and a reduction in problem behaviours.

Please contact my primary supervisor Kathleen Liberty at this address

Kathleen.liberty@canterbury.ac.nz if you have any questions regarding this study.

Thank you again for your cooperation!